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BY  
CARL TOLDT, M.D.  
PROFESSOR OF ANATOMY IN THE UNIVERSITY OF VIENNA

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BY  
M. EDEN PAUL, M.D. BRUX., M.R.C.S., L.R.C.P.

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F. ANGIOLOGY  
(FIGURES 933 TO 1123 AND INDEX)



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## ANGEIOLOGY—GENERAL CONSIDERATIONS



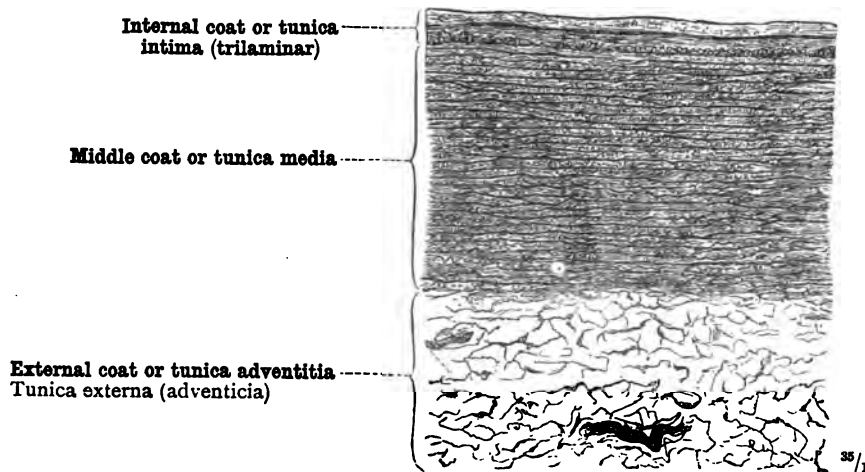


FIG. 933.—PART OF A TRANSVERSE SECTION THROUGH THE WALL OF THE DESCENDING THORACIC AORTA (HUMAN): INTERNAL, MIDDLE, AND EXTERNAL COATS; TUNICA INTIMA, MEDIA, ET EXTERNA.

In the external coat sections of two vasa vasorum are seen.

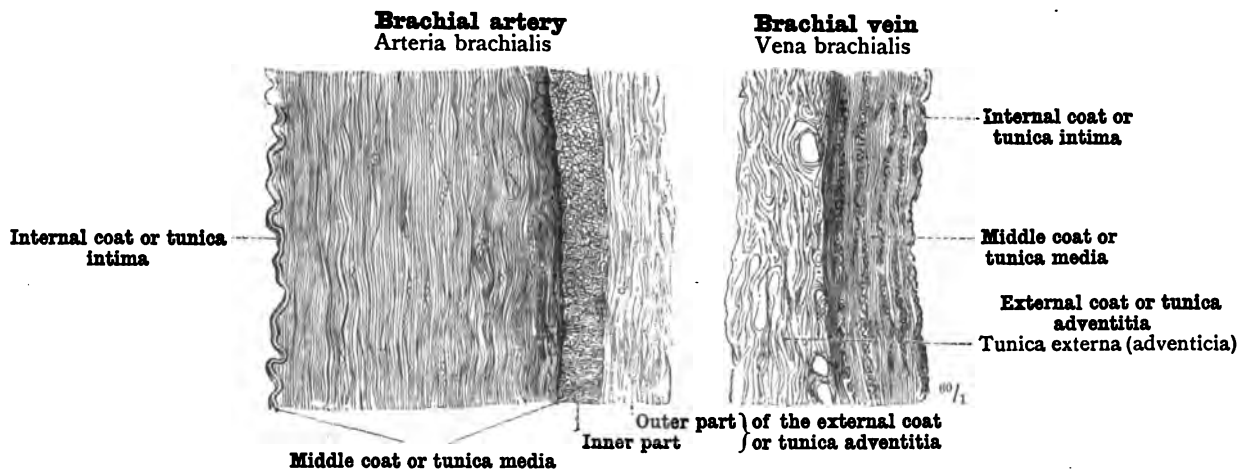


FIG. 934.—PART OF A TRANSVERSE SECTION THROUGH THE CUBITAL PORTION OF THE BRACHIAL ARTERY AND VEIN (HUMAN).

The Layers of the Walls of the Bloodvessels.

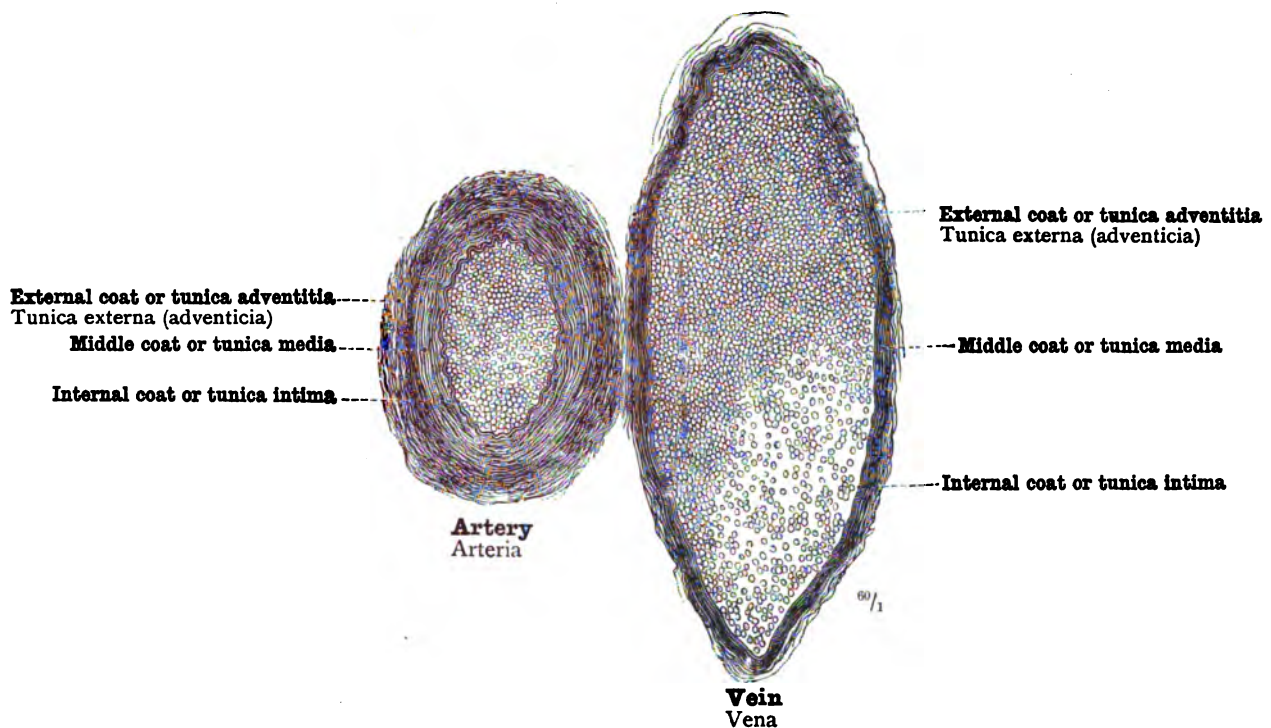


FIG. 935.—TRANSVERSE SECTION THROUGH AN ARTERY OF THE MESENTERY AND ITS ACCOMPANYING VEIN (HUMAN).

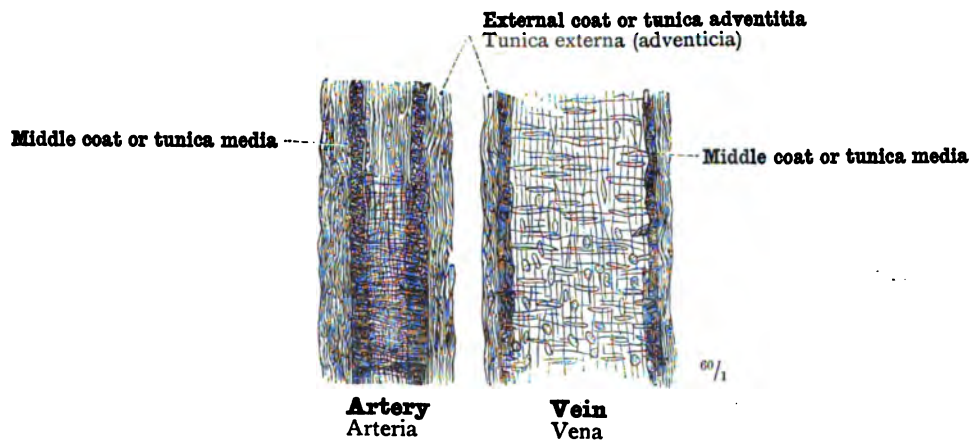


FIG. 936.—LONGITUDINAL SECTION OF A SMALL ARTERY AND VEIN OF THE PANCREAS.

The Layers of the Walls of the Bloodvessels.

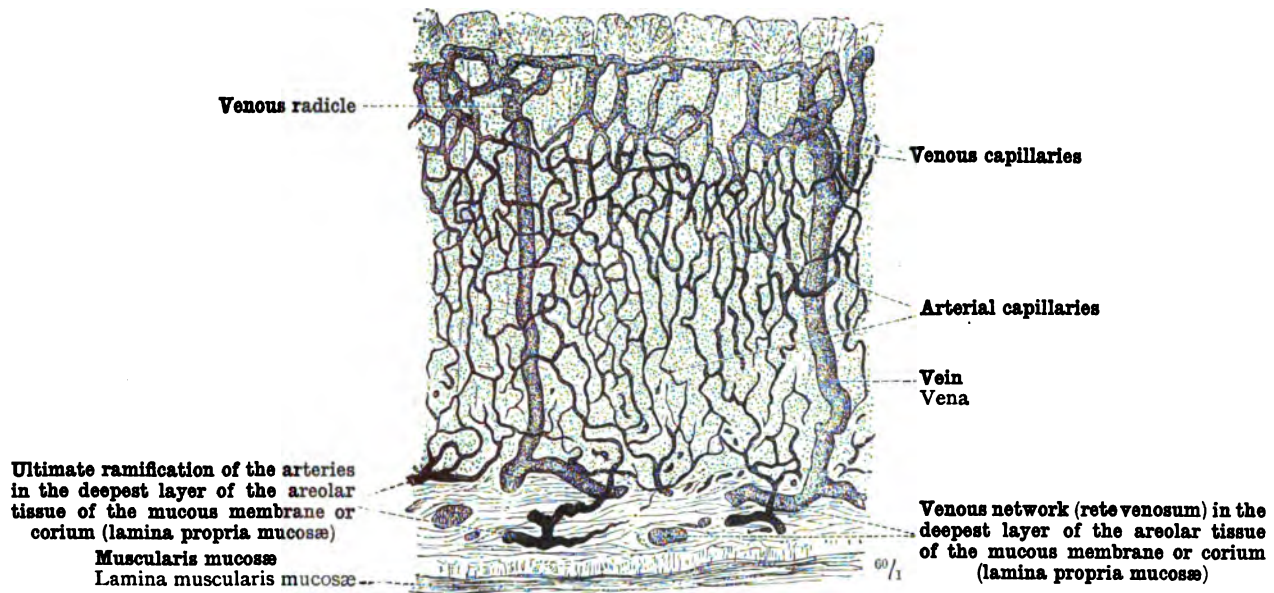


FIG. 937.—BLOODVESSELS OF THE GASTRIC MUCOUS MEMBRANE IN VERTICAL SECTION: VASA CAPILLARIA, CAPILLARY VESSELS, AND THEIR CONNEXION WITH THE ARTERIES AND THE VEINS.

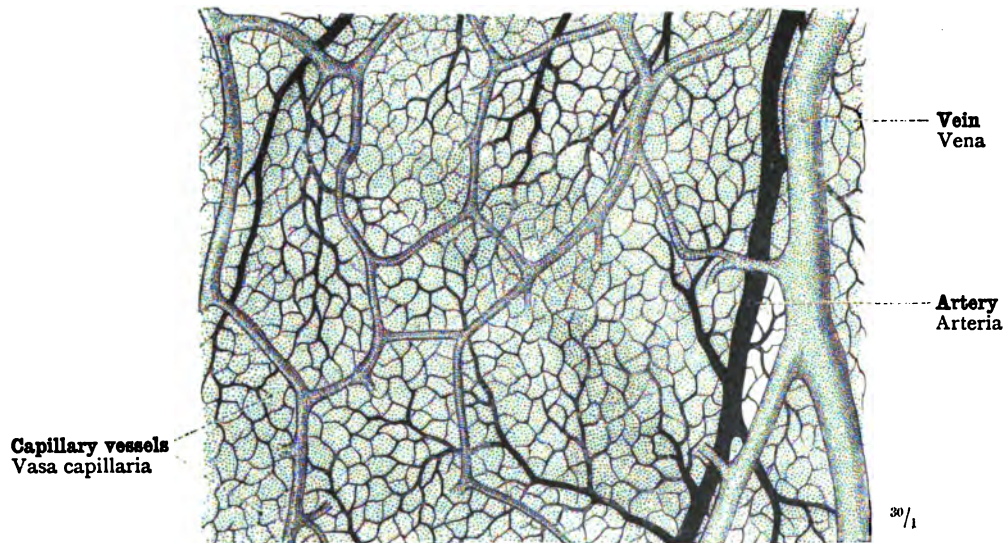


FIG. 938.—THE VENOUS NETWORK, RETE VENOSUM, AND THE ULTIMATE RAMIFICATION OF THE ARTERIES IN THE DEEPEST LAYER OF THE CORIUM (*LAMINA PROPRIA MUCOSÆ*) OF THE GASTRIC MUCOUS MEMBRANE.

The plane of the vascular network is parallel with the surface of the mucous membrane.

#### The Capillary and Subcapillary Vascular Ramification.

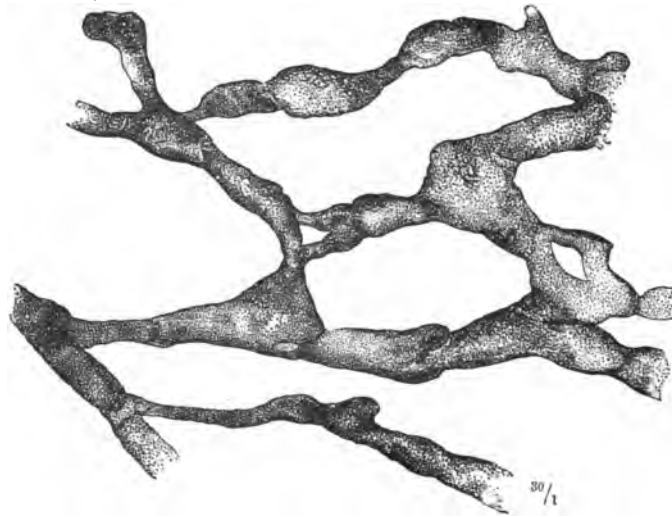


FIG. 939.—VALVED SUBCAPILLARY LYMPHATIC VESSELS. (VASA LYMPHATICA) FROM THE SUB-MUCOUS LYMPHATIC PLEXUS OF THE HUMAN OCULAR CONJUNCTIVA (CONJUNCTIVA BULBI), INJECTED WITH TRANSPARENT GELATIN.

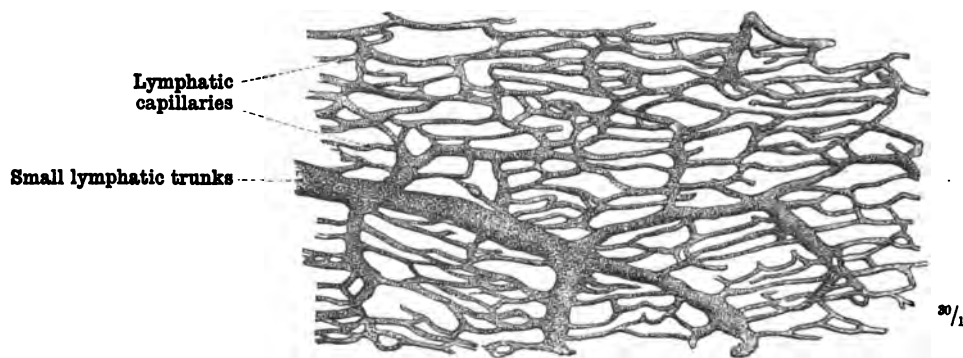


FIG. 940.—LYMPHATIC CAPILLARIES FROM THE MUSCULAR COAT OF THE STOMACH OF THE FROG, INJECTED WITH OPAQUE YELLOW GELATIN.

The Capillary and Subcapillary Lymphatics (Vasa Lymphatica).



Septum of the sheath of the bloodvessels, or septum  
vaginæ vasorum—Septum vaginæ vasorum

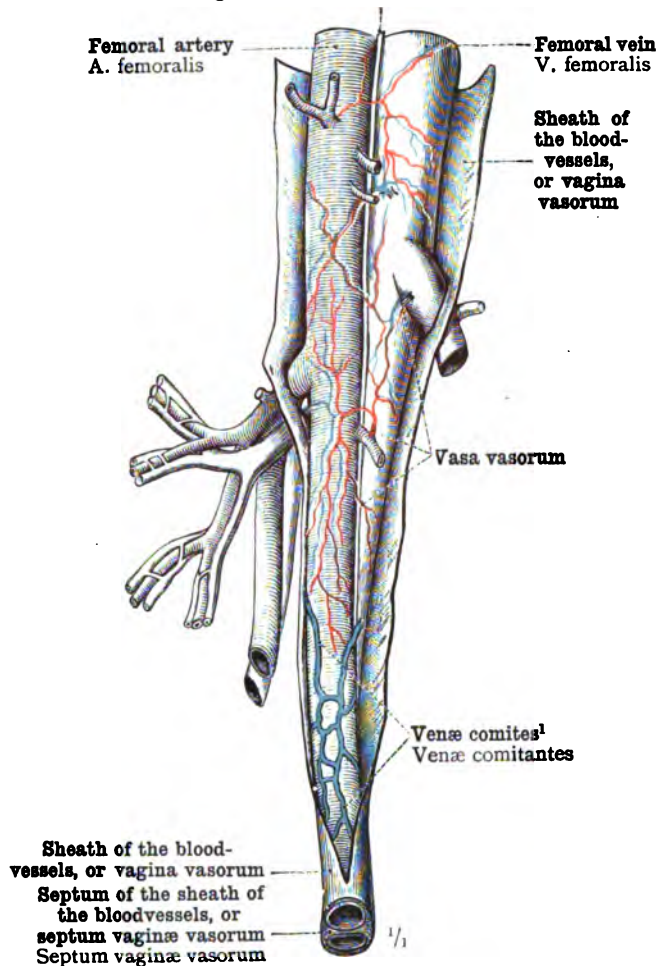


FIG. 941.—THE SHEATH OF THE FEMORAL ARTERY AND VEIN, OPENED. THE VASA VASORUM AND THE VENÆ COMITES<sup>1</sup> OF THE FEMORAL ARTERY. SEMIDIAGRAMMATIC.

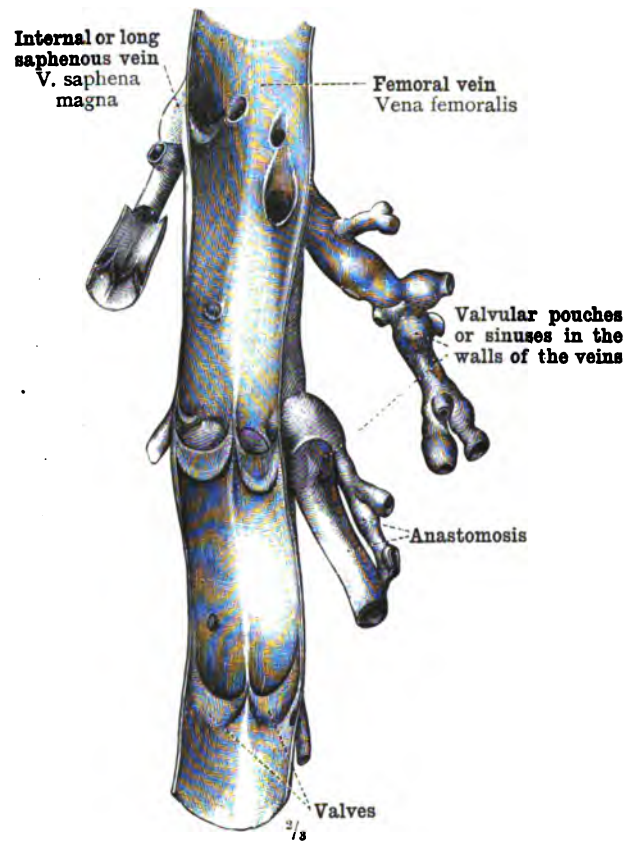


FIG. 942.—THE VALVES OF THE EXCISED FEMORAL VEIN AND ITS BRANCHES.

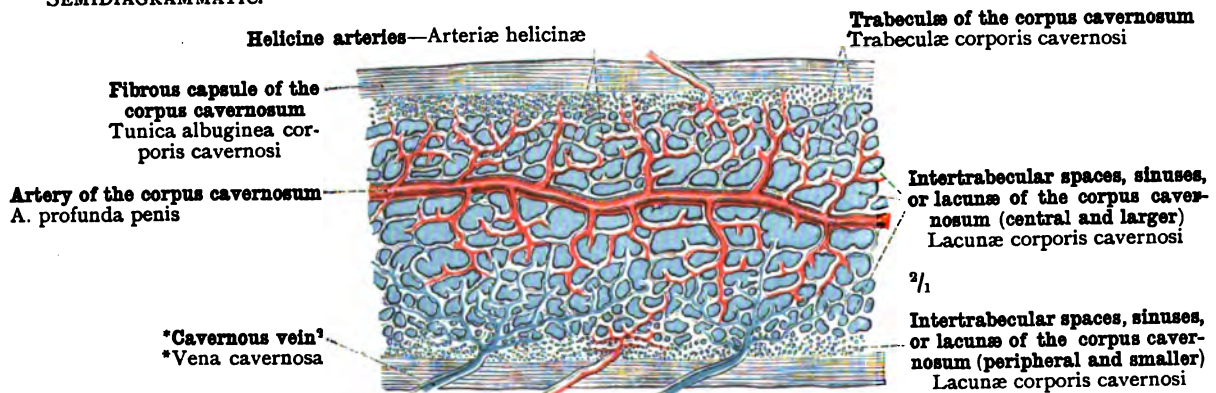


FIG. 943.—LONGITUDINAL SECTION THROUGH THE CORPUS CAVERNOSUM OF THE PENIS: RAMIFICATION OF THE ARTERY OF THE CORPUS CAVERNOSUM (ARTERIA PROFUNDA PENIS); ARTERIÆ HELICINÆ, HELICINE ARTERIES; VENÆ CAVERNOSÆ, \*CAVERNOSUS VEINS<sup>2</sup>; THE FIBROUS CAPSULE, THE TRABECULÆ, AND THE INTERTRABECULAR SPACES, SINUSES, OR LACUNÆ OF THE CORPUS CAVERNOSUM. SEMIDIAGRAMMATIC.

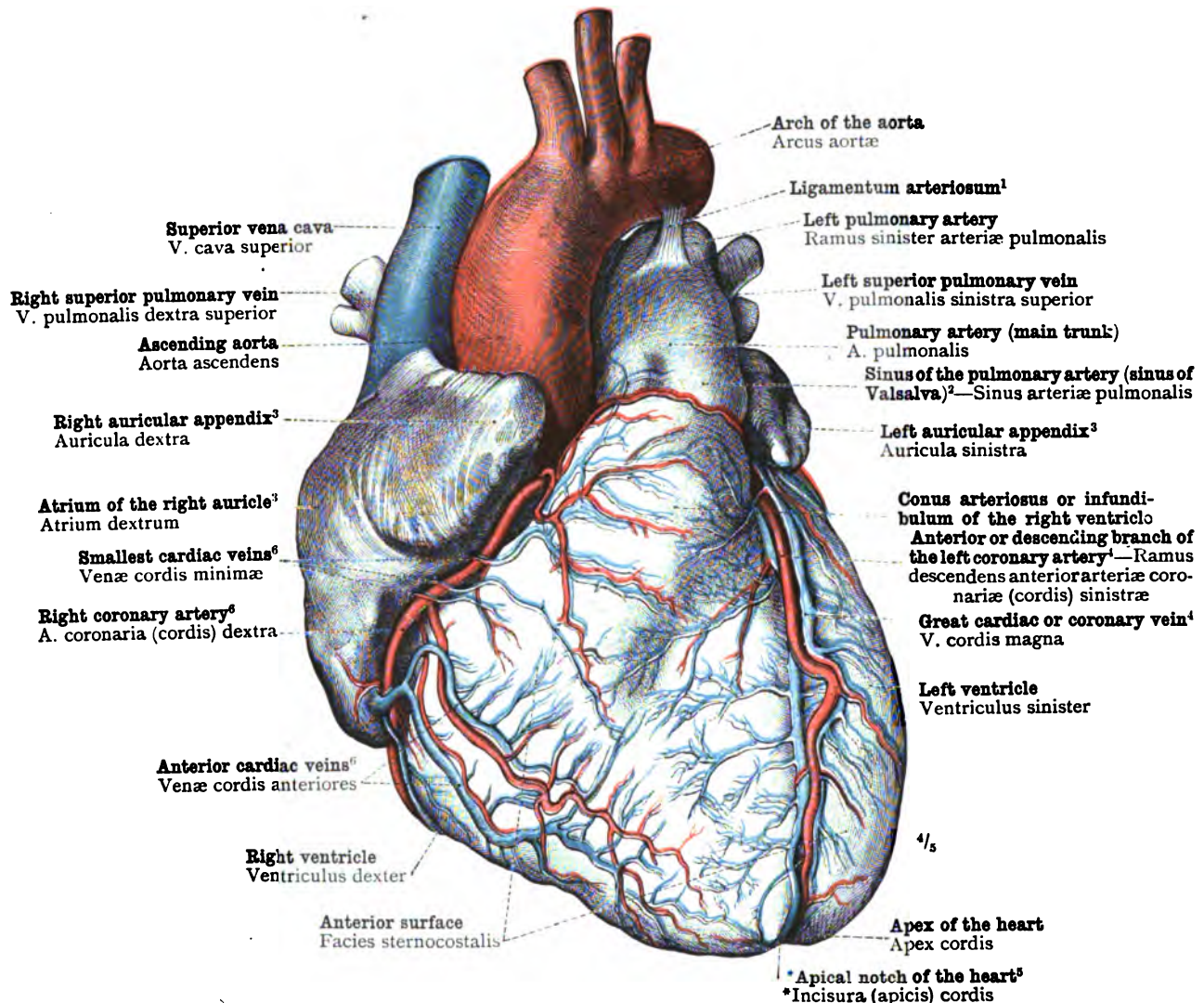
<sup>1</sup> In full, *venæ comites vel satellites arteriarum*.

<sup>2</sup> *Venæ Cavernosæ*.—The venous blood leaves the corpora cavernosa of the penis by two roots. A larger moiety leaves the crura to join the internal pudic veins by the *veins of the corpora cavernosa* (corresponding to the arteries of the same name). The remainder passes by small veins which pierce the fibrous capsule of the corpora cavernosa in the free region of the penis, and, anastomosing with cutaneous veins, join the dorsal vein of the penis. These latter are called by Toldt *\*cavernous veins*.—Tr.

Vasa vasorum.—Vagina vasorum, the sheath of the bloodvessels.—The valves of the veins.—  
Corpus cavernosum of the penis.

COR  
THE HEART





- <sup>1</sup> See Appendix, note <sup>111</sup>. <sup>2</sup> See Appendix, note <sup>112</sup>. <sup>3</sup> See Appendix, note <sup>113</sup>.  
<sup>4</sup> These vessels are named by Macalister the *anterior interventricular artery and vein*.—Tr.  
<sup>5</sup> \**Apical Notch of the Heart*.—This is merely the apical portion of the *interventricular groove, furrow, or sulcus*.—Tr.  
<sup>6</sup> See Appendix, note <sup>114</sup>.  
<sup>7</sup> *Borders of the Heart*.—These are not mentioned by the author in the original work. The *upper or left border*, conspicuous in the present figure, is shorter, rounder, and thicker than the other, hence it is often called *margo obtusus*; the *lower or right border*, conspicuous in Fig. 945, is longer, and is thin compared with the other: for this reason it is distinguished as *margo acutus*.—Tr.

FIG. 944.—THE HEART SEEN FROM BEFORE, WITH INJECTED CORONARY VESSELS: THE RIGHT CORONARY ARTERY, ARTERIA CORONARIA (CORDIS) DEXTRA; THE ANTERIOR OR DESCENDING BRANCH OF THE LEFT CORONARY ARTERY; THE COMMENCEMENT OF THE GREAT CARDIAC OR CORONARY VEIN, VENA CORDIS MAGNA; THE ANTERIOR CARDIAC AND THE SMALLEST CARDIAC VEINS, VENÆ CORDIS ANTERIORES ET VENÆ CORDIS MINIMÆ. THE LIGAMENTUM ARTERIOSUM, OR LIGAMENT OF BOTALLUS (see Appendix, note <sup>111</sup>). MARGO OBTUSUS CORDIS, THE UPPER OR LEFT BORDER OF THE HEART (see note <sup>7</sup> above).

The cavities of the heart have been injected with tallow.

### External Appearance and Bloodvessels of the Heart.

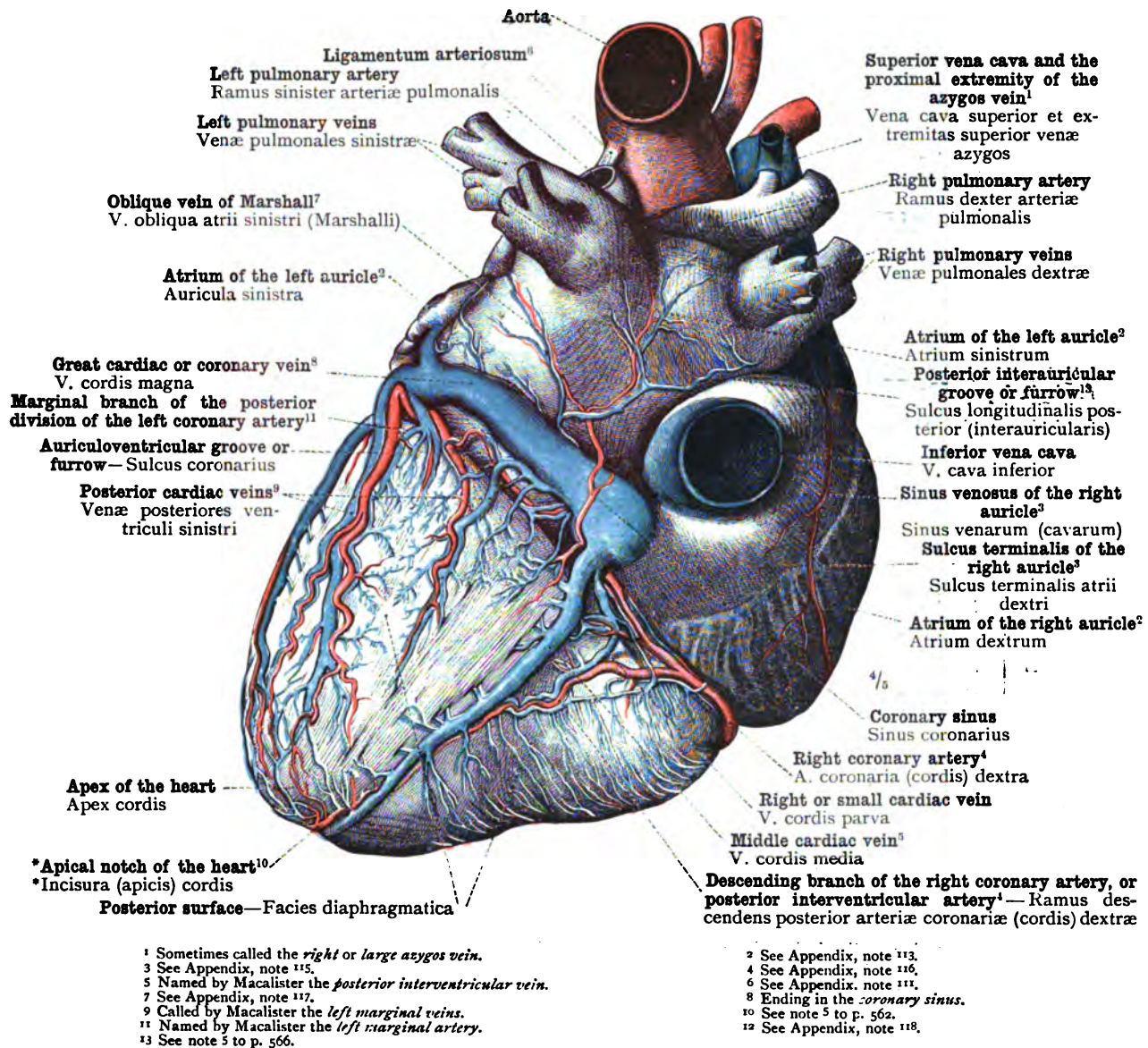


FIG. 945.—THE HEART SEEN FROM BEHIND, WITH INJECTED CORONARY VESSELS: THE RIGHT CORONARY ARTERY, ARTERIA CORONARIA (CORDIS) DEXTRA, WITH ITS DESCENDING BRANCH, RAMUS DESCENDENS POSTERIOR (POSTERIOR INTERVENTRICULAR ARTERY); THE POSTERIOR OR TRANSVERSE BRANCH OF THE LEFT CORONARY ARTERY, RAMUS CIRCUMFLEXUS ARTERIÆ CORONARIÆ (CORDIS) SINISTRÆ, GIVING OFF THE LARGE MARGINAL BRANCH; THE GREAT CARDIAC OR CORONARY VEIN, VENA CORDIS MAGNA, TERMINATING IN THE CORONARY SINUS, SINUS CORONARIUS; THE MIDDLE AND THE RIGHT OR SMALL CARDIAC VEINS, VENÆ CORDIS MEDIA ET PARVA; THE OBLIQUE VEIN OF MARSHALL, VENA OBLIQUA ATRII SINISTRI (MARSHALLI). THE SULCUS TERMINALIS OF THE RIGHT AURICLE, SULCUS TERMINALIS ATRII DEXTRI; AND THE SINUS VENOSUS, SINUS VENARUM (CAVARUM). \*CORONA CORDIS (see Appendix, note <sup>118</sup>), BASIS CORDIS (see Appendix, note <sup>118</sup>), AND THE INFERIOR SURFACE (FACIES DIAPHRAGMATICA) OF THE HEART. MARGO ACUTUS CORDIS, THE LOWER OR RIGHT BORDER OF THE HEART (see note <sup>7</sup> on p. 562).

The same preparation as that seen in Fig. 944, viewed in this case from behind.

### External Appearance and Bloodvessels of the Heart.



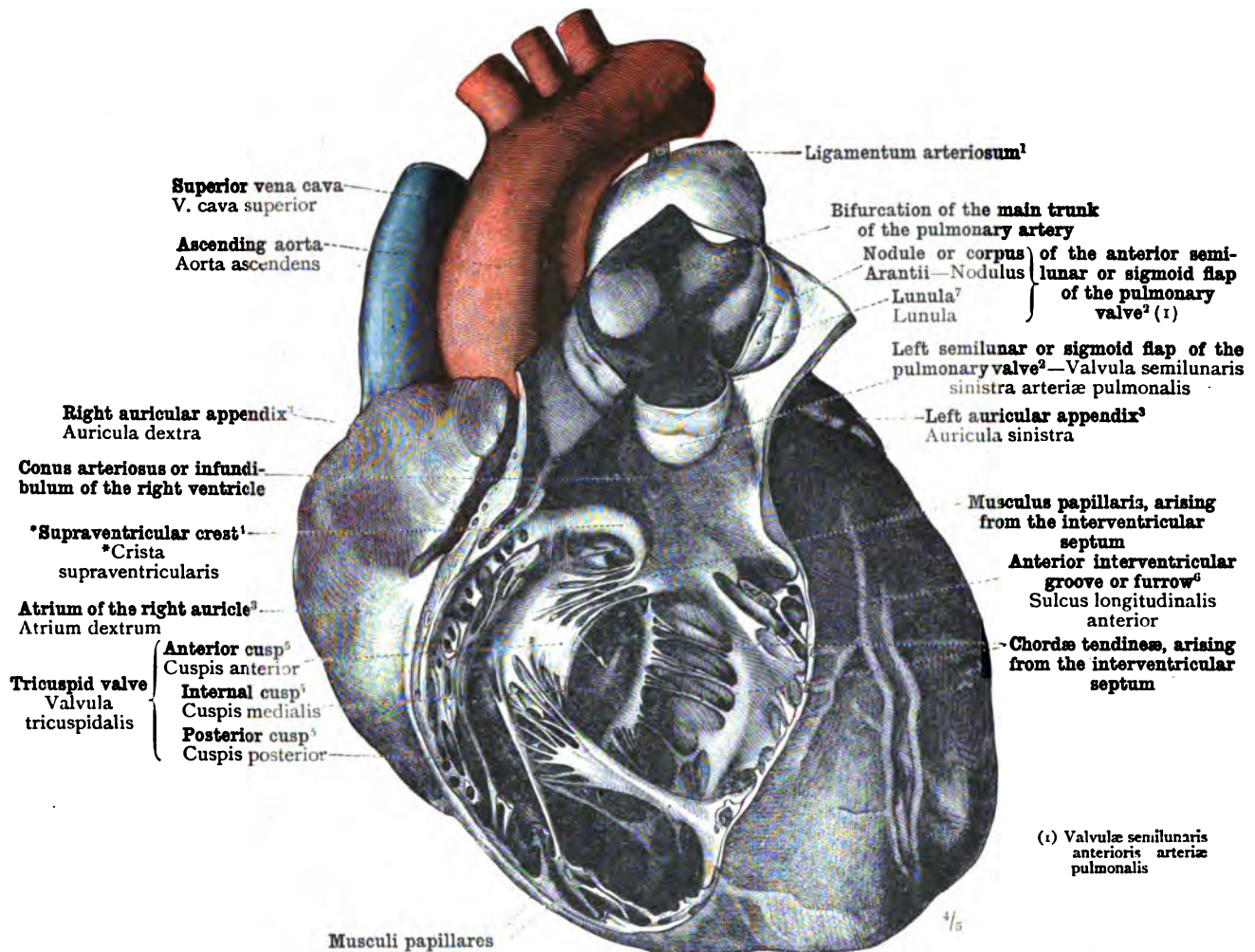


FIG. 946.—THE HEART SEEN FROM BEFORE.

The anterior wall of the right ventricle and of the conus arteriosus or infundibulum has been removed; the main trunk of the pulmonary artery, arteria pulmonalis, has been opened by an incision passing from a point between the anterior and the right semilunar or sigmoid flaps of the pulmonary valve<sup>2</sup> to the bifurcation, and the anterior wall of the artery has been turned to the left. In this manner the tricuspid valve, valvula tricuspidalis, with its papillary muscles, musculi papillares, and tendinous chords, chordæ tendineæ, and also the semilunar or sigmoid flaps of the pulmonary valve with their nodules, or corpora Arantii, and lunulæ, have been brought into view. The heart had previously been hardened in the distended state (*i.e.*, in diastole) by immersion in chromic acid solution and alcohol.

<sup>1</sup> See Appendix, note <sup>111</sup>.

<sup>2</sup> *Flaps of the Aortic and Pulmonary Valves.*—These are differently designated by different authorities. I. The *Pulmonary Valve*. According to Von Langer and Toldt, the flaps of this valve are *anterior*, *right*, and *left*; according to Quain, they are *right*, *left*, and *posterior*; and according to Macalister, they are (1) *anterior* and to the left, (2) *posterior* and to the right, and (3) *posterior* and to the left. II. The *Aortic Valve*. According to Von Langer and Toldt, the flaps of this valve are *posterior*, *right*, and *left*; according to Quain, they are *anterior*, *right*, and *left*; and according to Macalister, they are (1) *behind* and to the right, (2) *forward* and to the right, and (3) *forward* and to the left. The position of these flaps can be accurately determined only by the examination of frozen sections of the thorax. The eleventh plate of Braune's "Atlas of Topographical Anatomy" (English edition) gives an excellent view of the aortic and pulmonary valves, and if the arrangement there figured is a normal one, Quain's description is certainly to be preferred. In the text, however, I follow Toldt's nomenclature of the flaps.—Tr.

<sup>3</sup> See Appendix, note <sup>113</sup>.

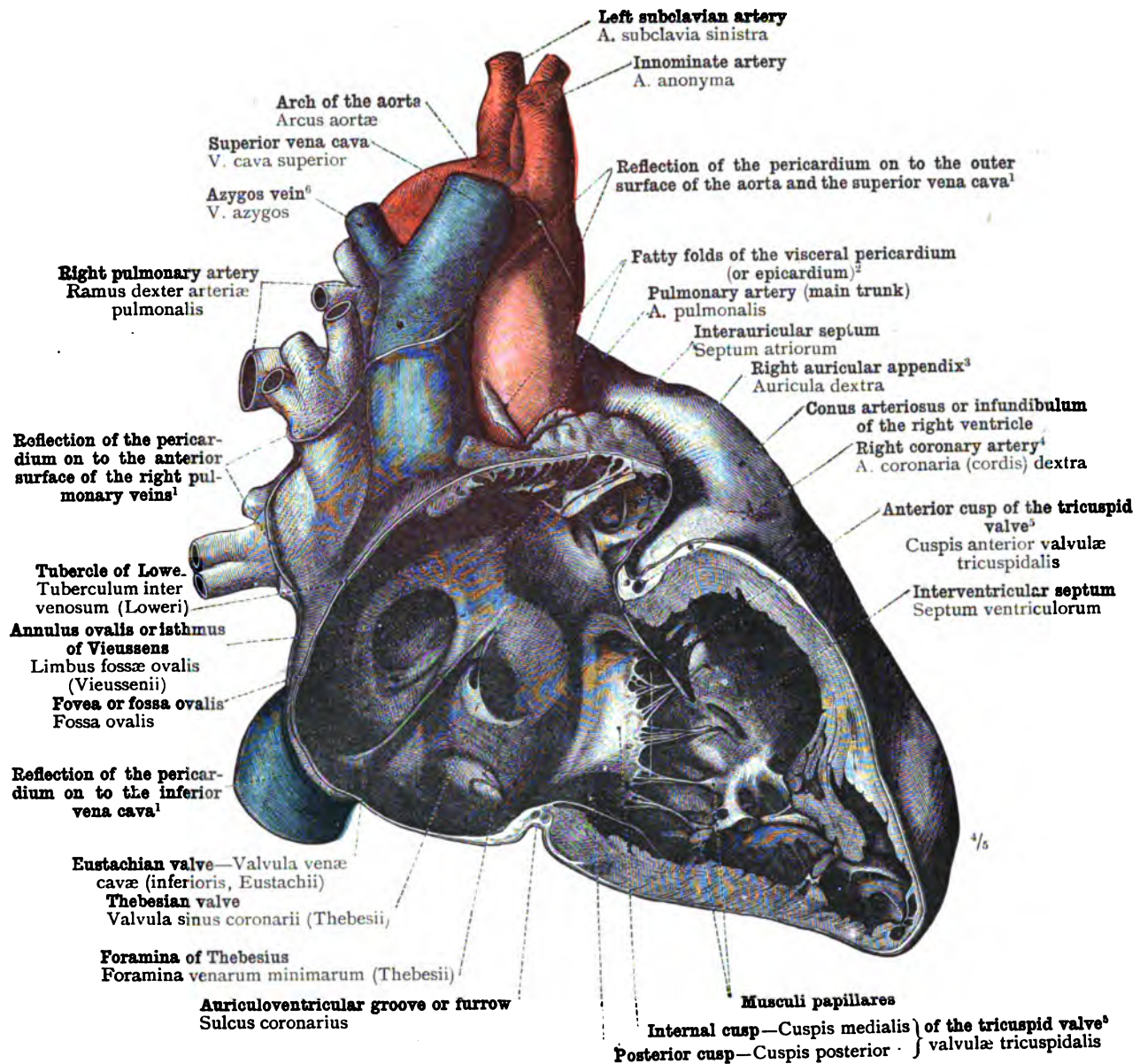
<sup>4</sup> *\*Supraventricular Crest.*—"On the inner wall of the right ventricle, between the *ostium venosum* (tricuspid orifice) and the conus arteriosus (or infundibulum), there is an eminence that projects freely into the ventricular cavity: this is the *crista supraventricularis*. Thus, whereas on the left side of the heart the mitral and aortic crura are closely approximated one to the other, and are surrounded by a common ring of muscular tissue, on the right side of the heart the tricuspid and pulmonary orifices are a little distance apart, and each is surrounded by its own ring of muscular tissue." (Von Langer and Toldt, *op. cit.*, p. 481). Quain (*op. cit.*, vol. ii., part ii., pp. 358, 359), speaking of the tricuspid and pulmonary orifices, writes: "Between the two the wall of the cavity projects downwards in the form of a thick, rounded muscular partition, which corresponds to the beginning of the aorta from the left ventricle"; but he gives the structure in question no name. Macalister (*op. cit.*, p. 327) writes: "Between the auriculoventricular and the pulmonic openings is an area in the septal wall crossed by oblique pillars, called the *fleshy pons*."—Tr.

<sup>5</sup> *Tricuspid Valve.*—The *cusps* or *flaps* of this valve are variously named by different authorities. *Cusps anterior*, the *anterior cusp* of Toldt, is similarly named by Macalister, but by Quain is called the *infundibular* or *left flap*; *cusps medialis*, the *internal cusp* of Toldt, is called the *right flap* both by Quain and by Macalister; *cusps posterior*, the *posterior cusp* of Toldt, is called *posterior* also by Macalister, and by Quain the *posterior* or *septal flap*.—Tr.

<sup>6</sup> See note 5 to p. 566.

<sup>7</sup> *Lunula.*—This term denotes the thin, narrow portion at the free edge of the semilunar flaps of the aortic and pulmonary valves. Toldt, however, describes *one* lunula in each flap, in the middle of which is the nodule or corpus Arantii; whereas English anatomists recognise *two* lunulæ in each flap, separated from one another by the nodule.—Tr.

Right ventricle—Ventriculus dexter.



<sup>1</sup> Or junction of the *parietal* and *visceral pericardium* (see also note <sup>2</sup>).  
<sup>2</sup> *Epicardium*.—The pericardium, like other serous membranes, consists of *outer* and *inner*, or *parietal* and *visceral* layers. The *visceral* or *cardiac pericardium* is called by Toldt the *epicardium*, and the latter name is occasionally used also in England.—T.R.  
<sup>3</sup> See Appendix, note <sup>113</sup>.  
<sup>4</sup> See Appendix, note <sup>114</sup>.  
<sup>5</sup> See note 5 to p. 564.  
<sup>6</sup> Sometimes called the *right* or *large azygos vein*.

FIG. 947.—THE HEART SEEN FROM THE RIGHT SIDE.

The heart having been hardened in formalin in the distended state (*i.e.*, in diastole), the right portion of the ventricles and the auricles was removed by a section passing upwards from the apex of the heart to the outer side of the orifices of the superior and inferior venæ cavæ. In the right ventricle, ventriculus dexter, the following structures are seen: The anterior, posterior, and internal cusps of the tricuspid valve (see note <sup>6</sup> to p. 564), also the musculi papillares and the chordæ tendineæ that arise from the interventricular septum. In the right auricle we see the fovea or fossa ovalis, with the annulus ovalis or isthmus of Vieussens, and the tubercle of Lowe; also the orifices of the venæ cavæ, the Eustachian valve, the orifice of the coronary sinus with the Thebesian valve, and the cavity of the right auricular appendix (auricula dextra). On the aorta, the superior vena cava, and the right pulmonary veins, we see the reflection of the parietal pericardium to form the visceral pericardium (see note <sup>2</sup> above).

The right auricle—Atrium dextrum.—The right ventricle—Ventriculus dexter.



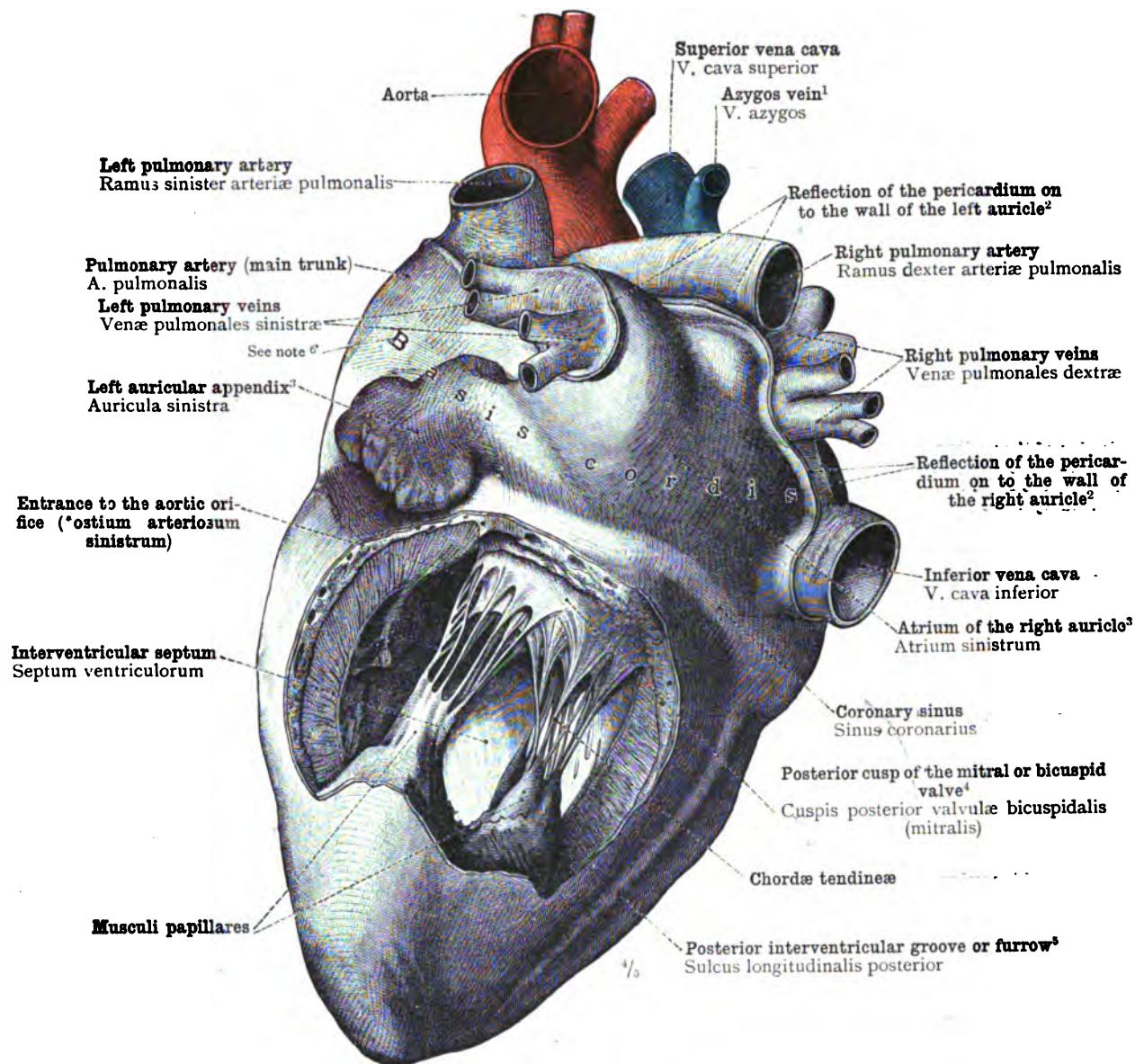


FIG. 948.—THE HEART SEEN FROM THE LEFT SIDE AND BELOW.

In the left ventricle, ventriculus sinister, which has been opened by the removal of a portion of its posterior wall, the mitral or bicuspid valve, valvula bicuspidalis (mitralis), the two musculi papillares, and the chordæ tendineæ of the latter, are displayed. At the base of the heart the reflection of the parietal pericardium to form the visceral pericardium of the auricles is seen (see notes <sup>1</sup> and <sup>2</sup> to p. 565). The preparation is the same as that shown in Fig. 946.

<sup>1</sup> Sometimes called the *right* or *large azygos vein*.

<sup>2</sup> Or junction of the *parietal* with the *visceral pericardium* (epicardium); see also note <sup>2</sup> to page 565.

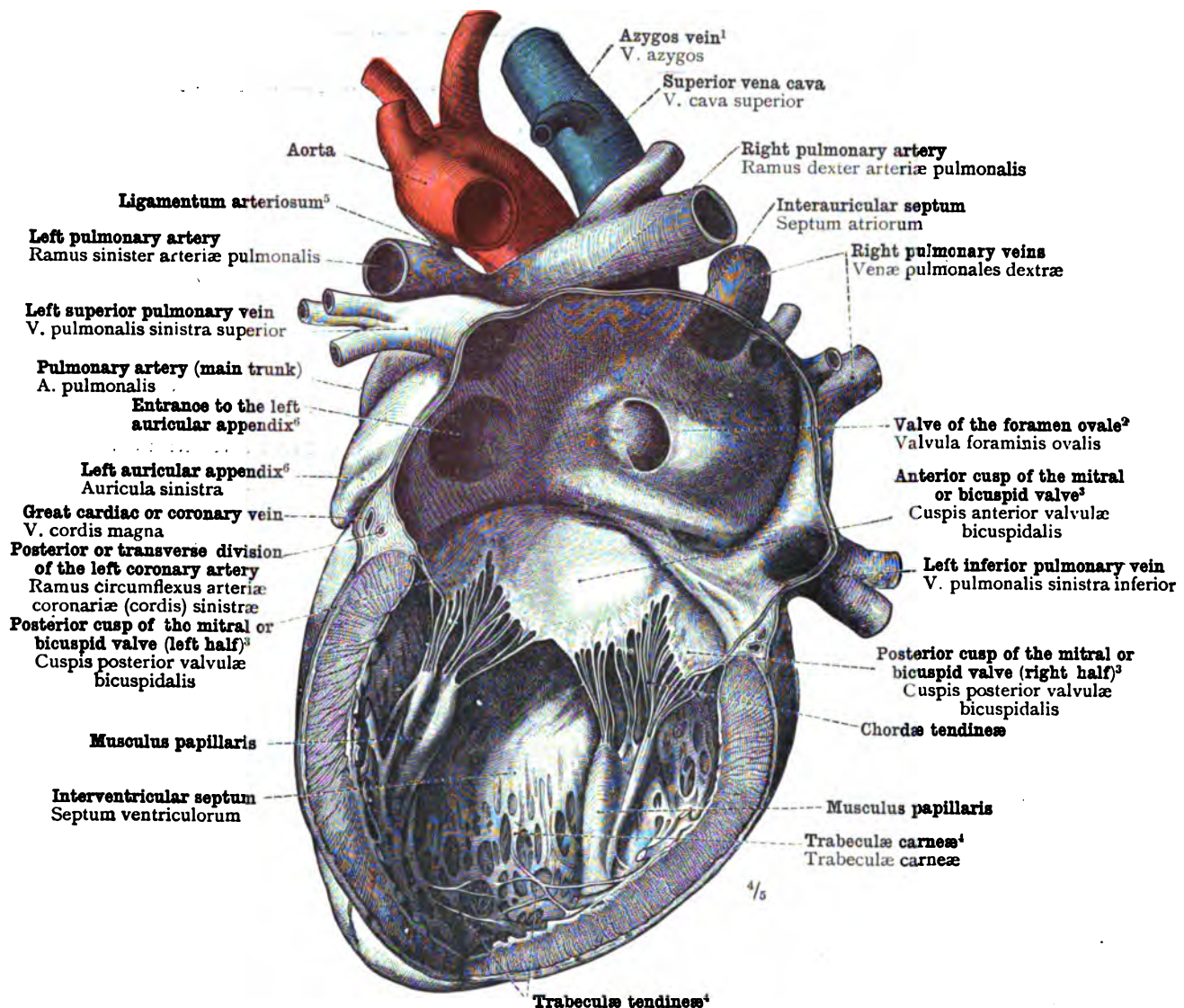
<sup>3</sup> See Appendix, note <sup>113</sup>.

<sup>4</sup> *Mitral or Bicuspid Valve*.—The *cusps* or *flaps* of this valve are named *anterior* and *posterior* respectively, but do not lie exactly in front and behind one another in coronal planes. The *anterior* flap, which is the larger of the two, is to the right as well as in front, between the mitral and the aortic orifices (hence it is sometimes named the *aortic flap* of the mitral valve); the *posterior* and smaller flap lies to the left of as well as behind the other, and close to the wall of the ventricle. At each side of the orifice, in the angles of junction of the large flaps, are small intermediate flaps.—Tr.

<sup>5</sup> *Sulcus Longitudinalis*.—Strictly, this term, as used by the author, denotes, not only the interventricular groove or furrow (anterior or posterior, as the case may be), but in addition the much less strongly marked interauricular groove or furrow. In the text, however, I have translated the term *sulcus longitudinalis*, either as *interventricular* or as *interauricular groove or furrow*, according as the ventricular or the auricular part of the "longitudinal sulcus" is indicated in the several figures.—Tr.

<sup>6</sup> *Basis Cordis*, or *Corona Cordis*.—These terms are used by the author as alternative names for that portion of the heart (together with the intrapericardial extremities of the great vessels) that lies above and to the right of the auriculoventricular groove. In England, however, the term *base of the heart* has a different signification. (See also Appendix, note <sup>118</sup>).—Tr.

Left ventricle—Ventriculus sinister.



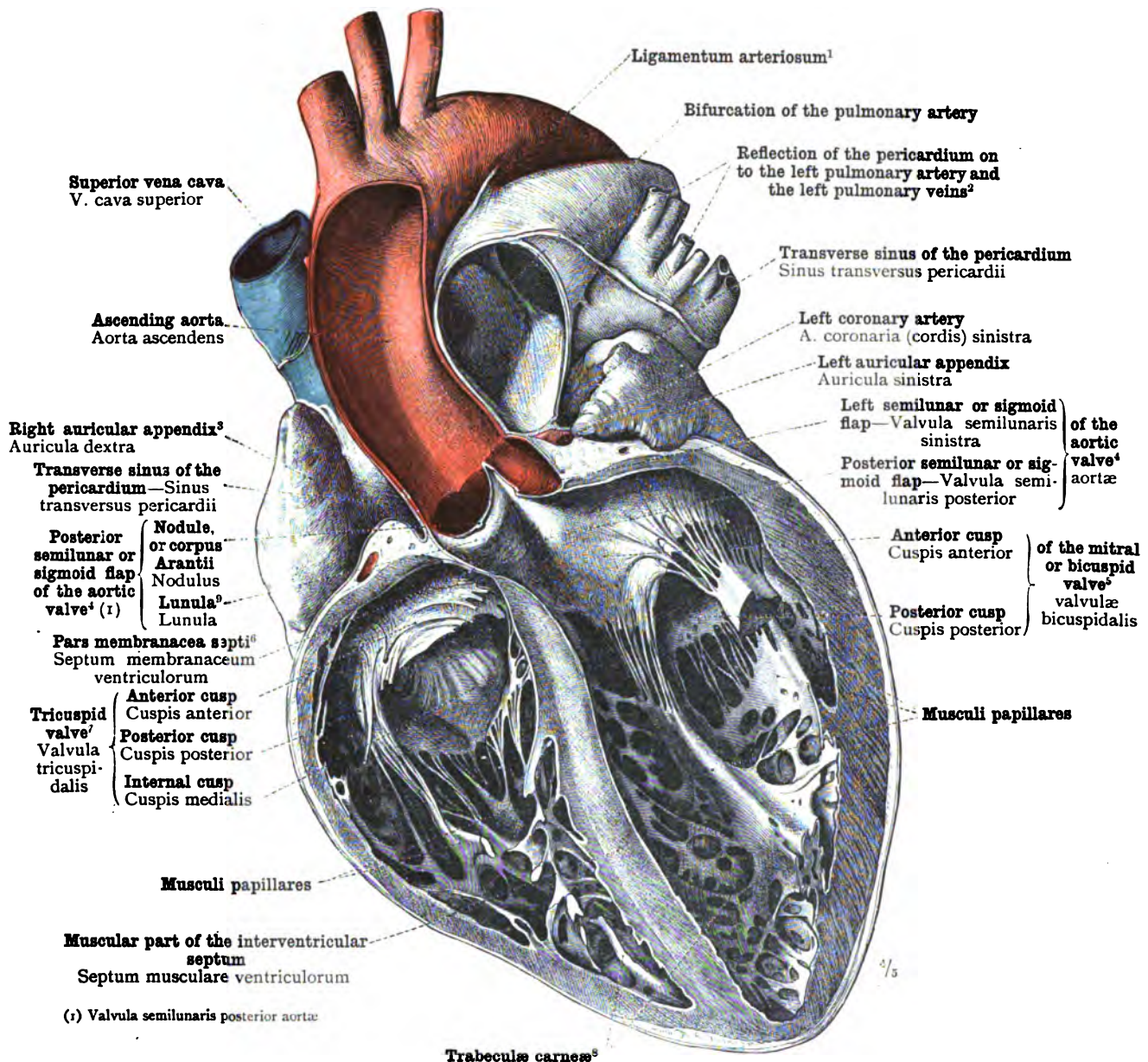
- <sup>1</sup> Called also the *right or large azygos vein*.  
<sup>2</sup> Called by Macalister *valvula sinistra sacci venosi*.  
<sup>3</sup> See note 4 to p. 566.  
<sup>4</sup> *Columnæ Carneæ*.—These muscular bands, projecting inwards from the walls into the cavities of the ventricles, are of two kinds: some are simply ridges, termed *pilasters*; others form bridges or beams, attached at their extremities but free in the middle, known as *trabeculæ*. Some of the trabeculæ, near the apex of the heart, are tendinous throughout the extent of their free parts, and these are distinguished as *trabeculæ tendinæ* from the more numerous, *trabeculæ carneæ*, which are fleshy throughout.—Tr.  
<sup>5</sup> See Appendix, note 111.  
<sup>6</sup> See Appendix, note 113.

FIG. 949.—THE HEART SEEN FROM THE LEFT SIDE.

The left ventricle and the left auricle have been opened by an incision passing upwards from the apex of the heart to the space between the auricular orifices of the left pulmonary veins, and through the upper wall of the left auricle to the space between the auricular orifices of the right pulmonary veins, and the lateral walls of the cavities have been drawn outwards. In the left ventricle, *ventriculus sinister*, we see the divided posterior flap, *cusps posterior*, and the intact anterior or aortic flap, *cusps anterior*, of the mitral or bicuspid valve; also the anterior and posterior papillary muscles, *musculi papillares*, with their *chordæ tendinæ*; also the interventricular septum, *septum ventriculorum*, the *trabeculæ carneæ*, and, near the apex, a few free tendinous trabeculæ, *trabeculæ tendinæ*. In the left auricle we see the orifices of the four pulmonary veins, *venæ pulmonales*; the interauricular septum, *septum atriorum*, with its membranous portion, representing the valve of the foramen ovale, and the entrance to the left auricular appendix.

Left auricle—Atrium sinistrum.—Left ventricle—Ventriculus sinister.





<sup>1</sup> See Appendix, note <sup>111</sup>.

<sup>2</sup> Or junction of the *parietal* and *visceral* pericardium. (See also note <sup>2</sup> to p. 565).—Tr.

<sup>3</sup> See Appendix, note <sup>113</sup>.

<sup>4</sup> See note <sup>2</sup> to p. 564.

<sup>5</sup> See note <sup>4</sup> to p. 566.

<sup>6</sup> The *membranous part of the interventricular septum* is sometimes spoken of as the *undefended space*.—Tr.

<sup>7</sup> See note <sup>5</sup> to p. 564.

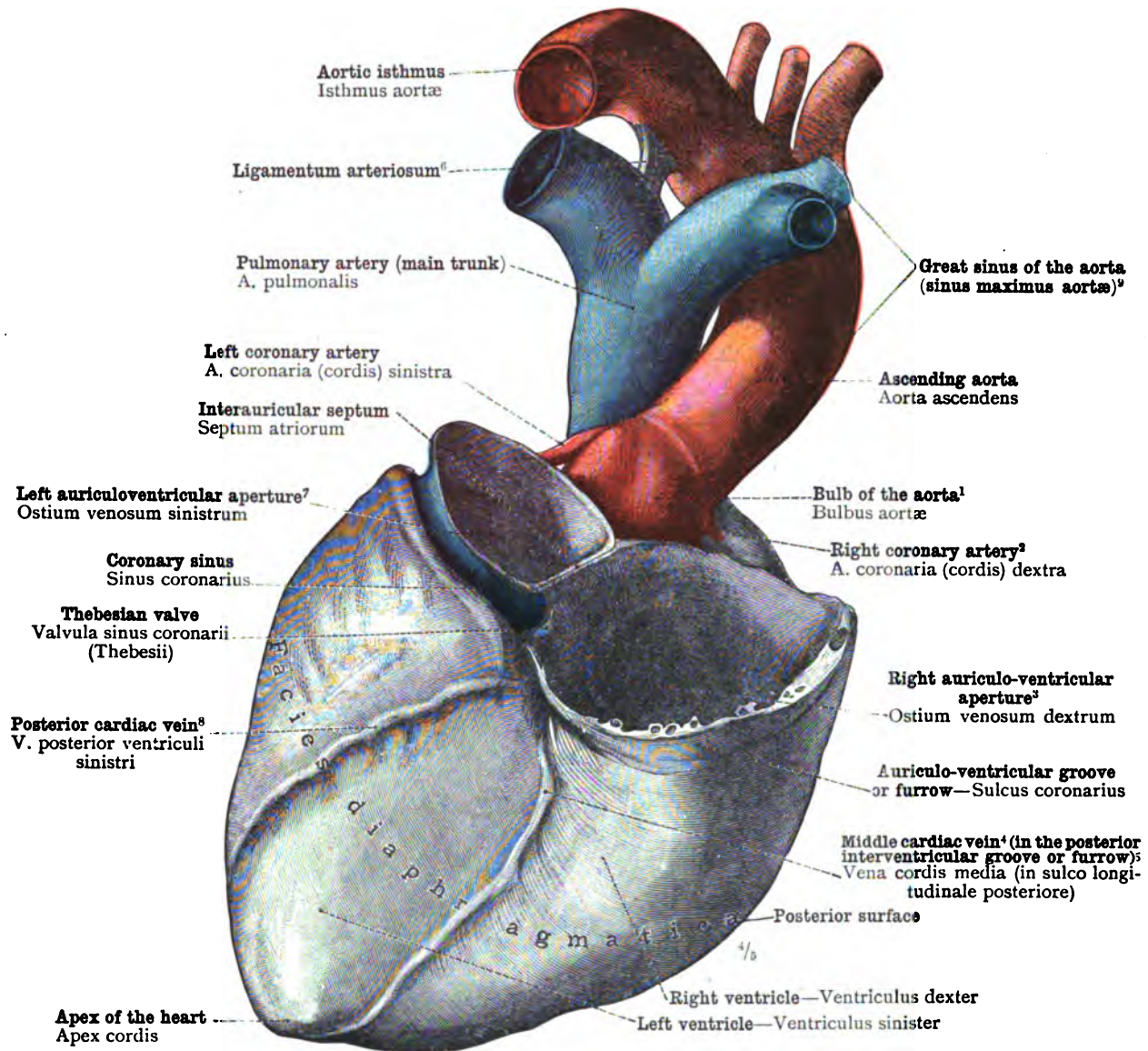
<sup>8</sup> See note <sup>4</sup> to p. 567.

<sup>9</sup> See note <sup>7</sup> to p. 564.

FIG. 950.—THE HEART SEEN FROM BEFORE.

The organ having been hardened in formalin in the distended state (*i.e.*, in diastole), the anterior portion of the \*cone of the heart (*i.e.*, the anterior portion of both ventricles—see Appendix, note <sup>118</sup>), the anterior half of the ascending aorta, and the main trunk of the pulmonary artery nearly as far as the bifurcation, were removed by a coronal section. In the opened \*cone of the heart, we see the interventricular septum, at the top of which is the *pars membranacea septi*, or undefended space (*septum membranaceum ventriculorum*); all the cusps of the mitral and tricuspid valves; and also the *musculi papillares* with their *chordae tendineae*. Of the auricles, the right and the left auricular appendices are visible; and between these and the aorta, on the right, and the main trunk of the pulmonary artery, on the left, the entrances to the transverse sinus of the pericardium. In the aortic orifice (*ostium arteriosum sinistrum*), the posterior semilunar or sigmoid flap of the aortic valve (see note <sup>2</sup> to p. 564), with its nodule, or *corpus Arantii*, and its two *lunulae* (see note <sup>7</sup> to p. 564), is preserved intact. On the anterior surface of the left pulmonary veins, the left pulmonary artery, and the superior vena cava, we see the reflection of the serous layer of the pericardium into the epicardium (see notes <sup>1</sup> and <sup>2</sup> to p. 565).

### The Ventricles of the Heart and the Interventricular Septum.



<sup>1</sup> *Bulb of the Aorta*.—This name is often given to the somewhat enlarged portion of the ascending aorta immediately above the aortic valve, which contains the three *sinuses of Valsalva*.—Tr.

<sup>2</sup> See Appendix, note 114.

<sup>3</sup> Or *tricuspid orifice*.

<sup>4</sup> Called by Macalister the *posterior interventricular vein*.

<sup>5</sup> See note 5 to p. 566.

<sup>6</sup> See Appendix, note 111.

<sup>7</sup> Or *mitral orifice*.

<sup>8</sup> Called by Macalister the *left marginal vein*.

<sup>9</sup> See Appendix, note 128.

FIG. 951.—THE POSTERIOR SURFACE, FACIES DIAPHRAGMATICA, OF THE \*CONE OF THE HEART (*i.e.*, THE VENTRICULAR PORTION OF THE HEART—see Appendix, note 118), WITH THE MAIN TRUNK OF THE PULMONARY ARTERY AND ITS BIFURCATION, THE ASCENDING AORTA, AND THE ARCH OF THE AORTA. THE BULB OF THE AORTA, BULBUS AORTÆ; THE ORIGIN OF THE CORONARY ARTERIES, RIGHT AND LEFT, ARTERIÆ CORONARIÆ (CORDIS), DEXTRA ET SINISTRA. THE LIGAMENTUM ARTERIOSUM, OR LIGAMENT OF BOTALLI, AND THE AORTIC ISTHMUS, ISTHMUS AORTÆ.

The heart having been hardened in the distended state (*i.e.*, in diastole), the auricles were removed by a section passing immediately above the auriculoventricular groove or furrow (sulcus coronarius), and the coronary sinus was thus laid open as far as the terminal orifice through which it communicates with the right auricle.

The Ventricular Portion of the Heart with the Aorta and the Pulmonary Artery.



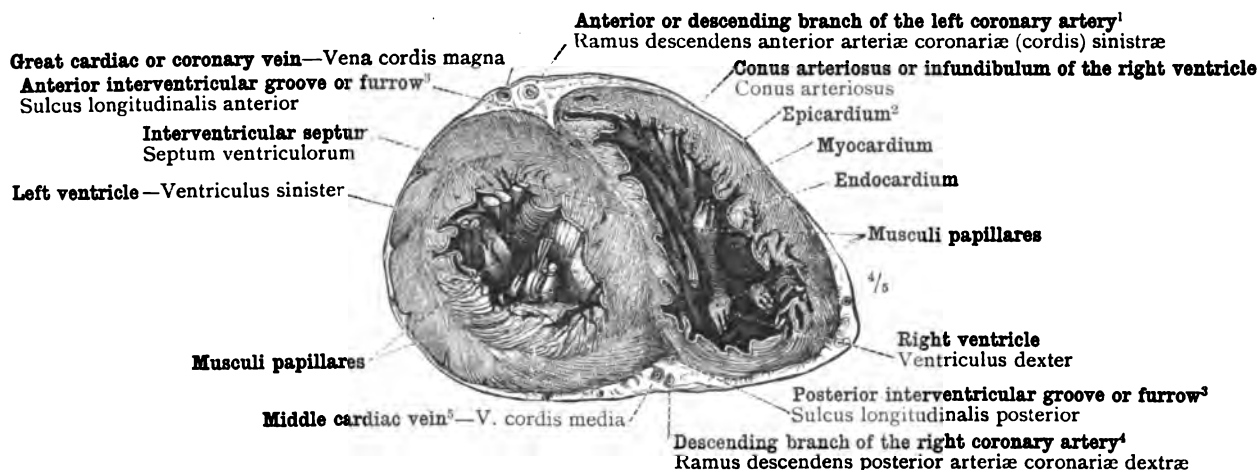
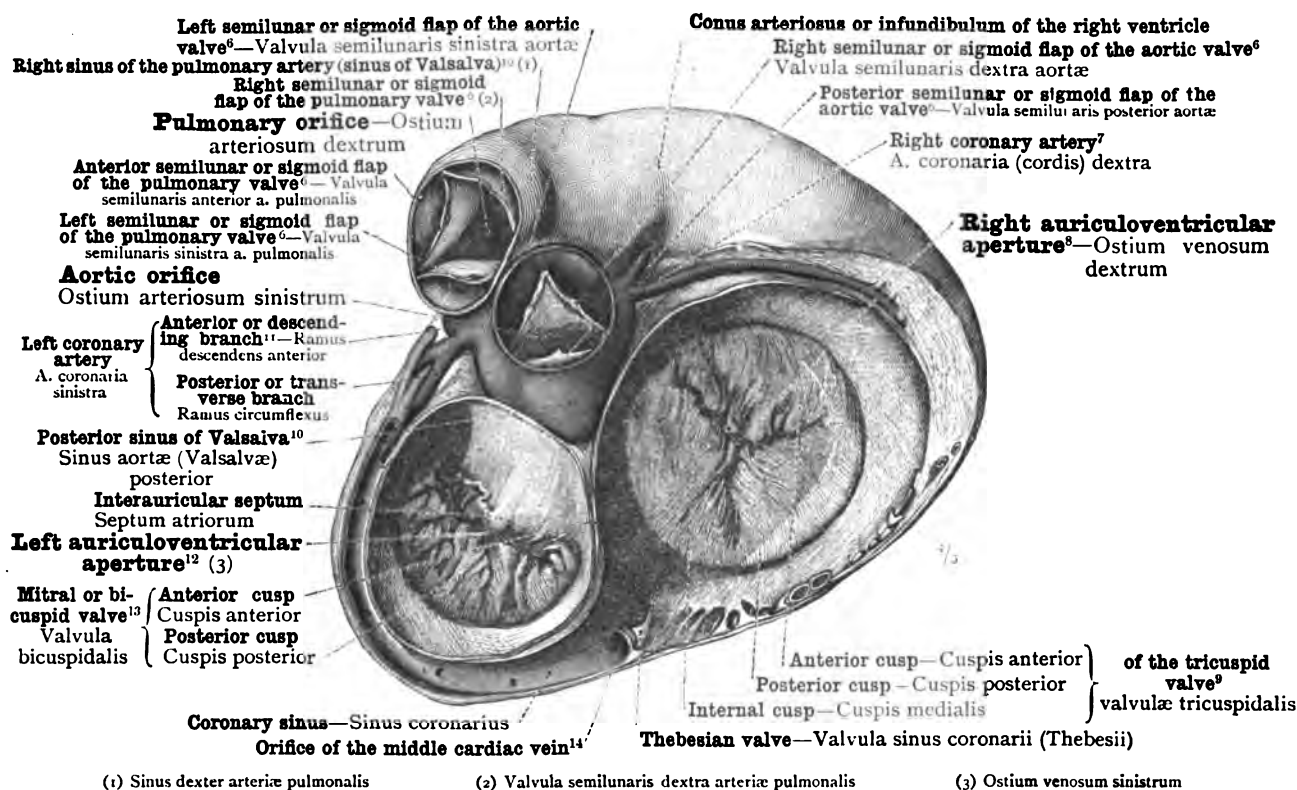


FIG. 952.—THE LOWER HALF OF THE TRANSVERSELY-DIVIDED \*CONE OF THE HEART (*i.e.*, THE VENTRICULAR PORTION OF THE HEART—see Appendix, note 118).

On the surface of the section we observe the nearly circular contour of the cavity of the left ventricle, and the sickle-shaped outline of that of the right ventricle; further, that the wall of the heart consists of the heart muscle, or myocardium, lined within by the endocardium, and enveloped without by the epicardium; and, finally, the notably greater thickness of the wall of the left ventricle.



(1) Sinus dexter arteriæ pulmonalis

(2) Valvula semilunaris dextra arteriæ pulmonalis

(3) Ostium venosum sinistrum

FIG. 953.—THE RELATIVE POSITION OF THE VALVES AND ORIFICES OF THE HEART, AND ALSO OF THE AORTA AND THE MAIN TRUNK OF THE PULMONARY ARTERY JUST ABOVE THEIR RESPECTIVE VALVES.

The section lays open the coronary sinus along its whole length as well as the adjoining portion of the great cardiac or coronary vein, and displays the Thebesian valve and the orifice of the middle cardiac vein. The valves are in the position that obtains during the cardiac systole, the auriculoventricular valves being closed, the pulmonary and aortic valves open.

¹ Called by Macalister the *anterior interventricular artery*.

³ See note 5 to p. 566.

⁵ Called by Macalister the *posterior interventricular vein*.

⁸ Or *tricuspid orifice*.

¹¹ Called by Macalister the *anterior interventricular artery*.

¹⁴ Called by Macalister the *posterior interventricular vein*.

² Or *visceral or cardiac pericardium*—see note 2 to p. 565.

⁴ Called by Macalister the *posterior interventricular artery*—see Appendix, note 114.

⁶ See note 2 to p. 564.

⁹ See note 5 to p. 564.

¹² Or *mitral orifice*.

⁷ See Appendix, note 114.

¹³ See Appendix, note 112.

¹⁵ See note 4 to p. 566.

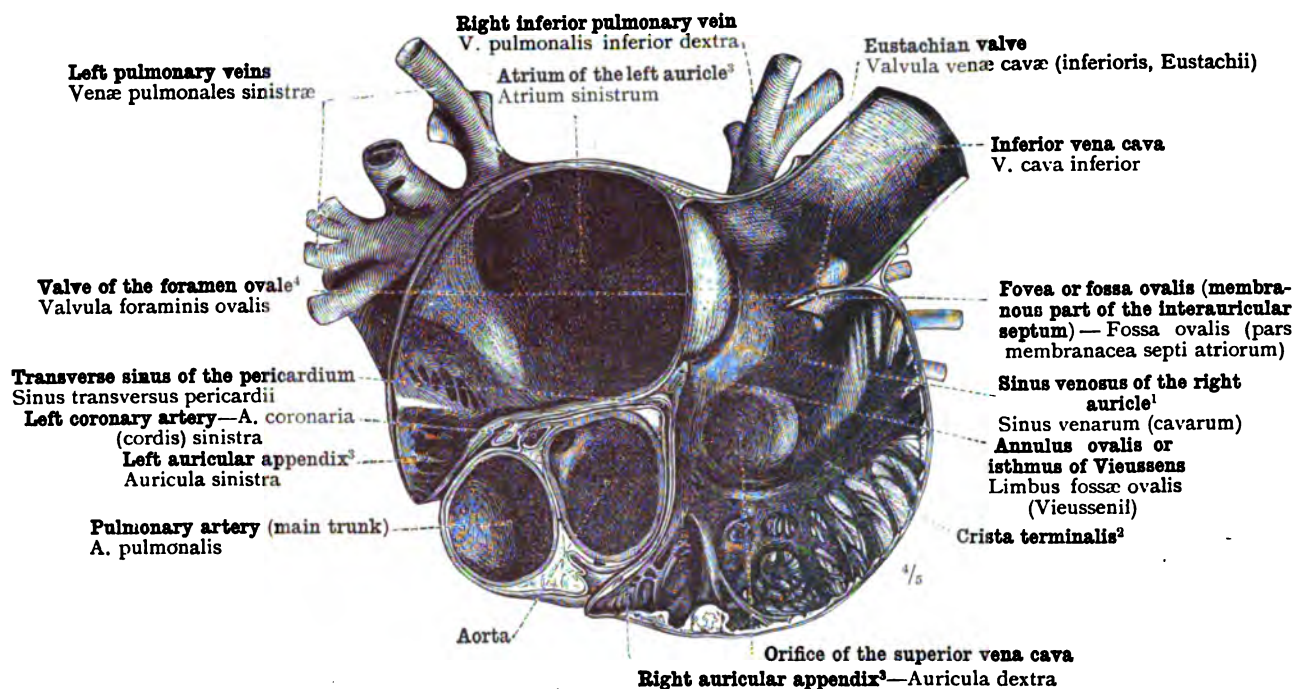


FIG. 954.—SINUS TRANSVERSUS PERICARDII, THE TRANSVERSE SINUS OF THE PERICARDIUM. MUSCULI PECTINATI AND CRISTA TERMINALIS OF THE RIGHT AURICLE<sup>2</sup>. SINUS VENOSUS<sup>2</sup>. THE MEMBRANOUS PART OF THE INTERAURICULAR SEPTUM.

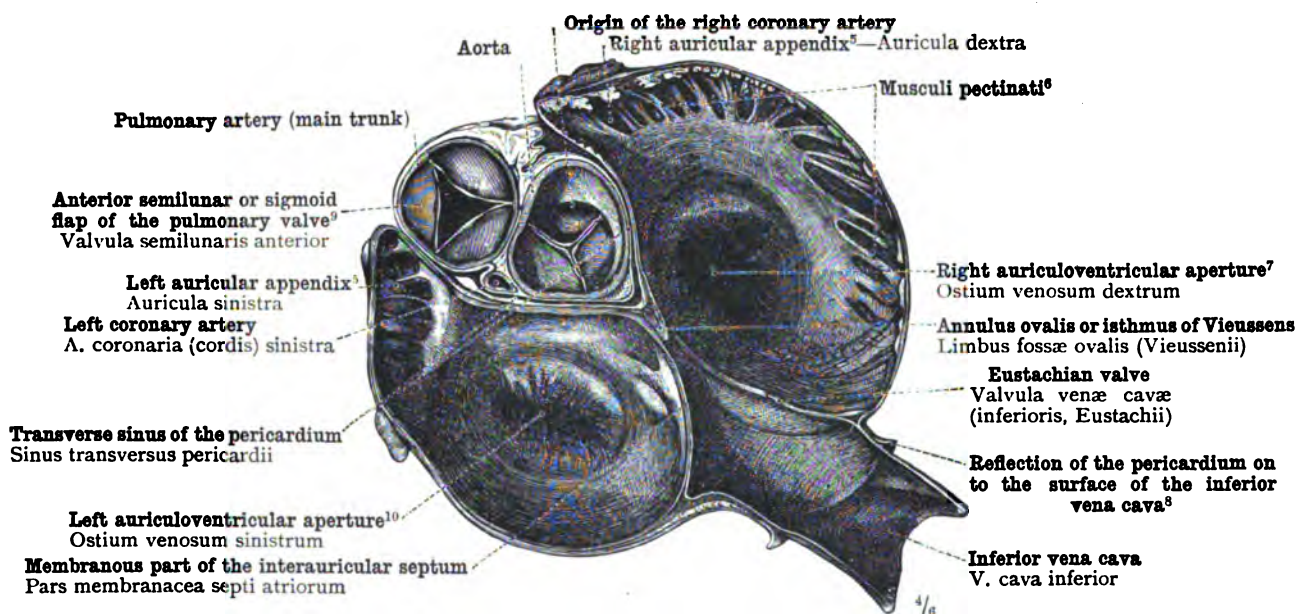


FIG. 955.—THE SEMILUNAR OR SIGMOID FLAPS OF THE AORTIC AND PULMONARY VALVES, WITH THEIR NODULES, OR CORPORA ARANTII (NODULI VALVULARUM SEMILUNARUM). THE MEMBRANOUS PART OF THE INTERAURICULAR SEPTUM AND THE EUSTACHIAN VALVE.

The auricular portion of the heart was removed by a section passing through both auricular appendices, through the root of the aorta and of the pulmonary artery, and hemisecting the orifice and the proximal portion of the inferior vena cava. In Fig. 954 the upper segment, and in Fig. 955 the lower segment, of the heart is shown.

<sup>1</sup> See Appendix, note <sup>115</sup>.

<sup>2</sup> *Crista Terminalis*.—This forms the boundary between the smooth wall of the *sinus venosus* (see Appendix, note <sup>115</sup>) and the fasciculated wall of the rest of the auricle. The fasciculi themselves are called *musculi pectinati*. The inward projection of the *crista terminalis* (called by Macalister *tenia terminalis*) corresponds to the *sulcus terminalis* seen on the outside of the wall of the auricle (see Fig. 945, p. 563).

<sup>3</sup> See Appendix, note <sup>113</sup>.

<sup>4</sup> See Appendix, note <sup>113</sup>.

<sup>5</sup> See Appendix, note <sup>113</sup>.

<sup>6</sup> Or junction of the *parietal* and *visceral pericardium*—see note <sup>2</sup> to p. 565.

<sup>7</sup> Or *tricuspid orifice*.

<sup>8</sup> Or *mitral orifice*.

<sup>9</sup> See note <sup>2</sup> to p. 564.

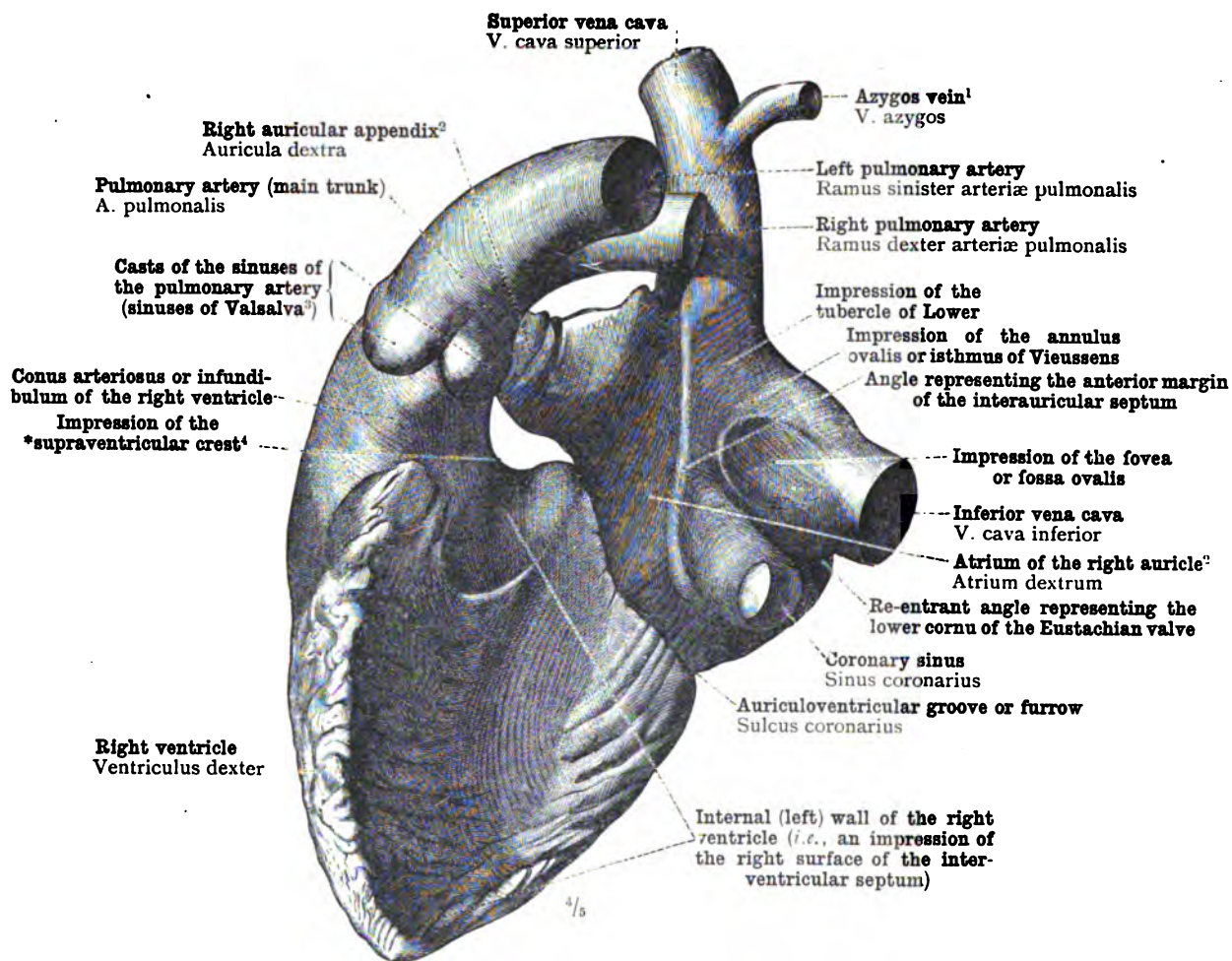
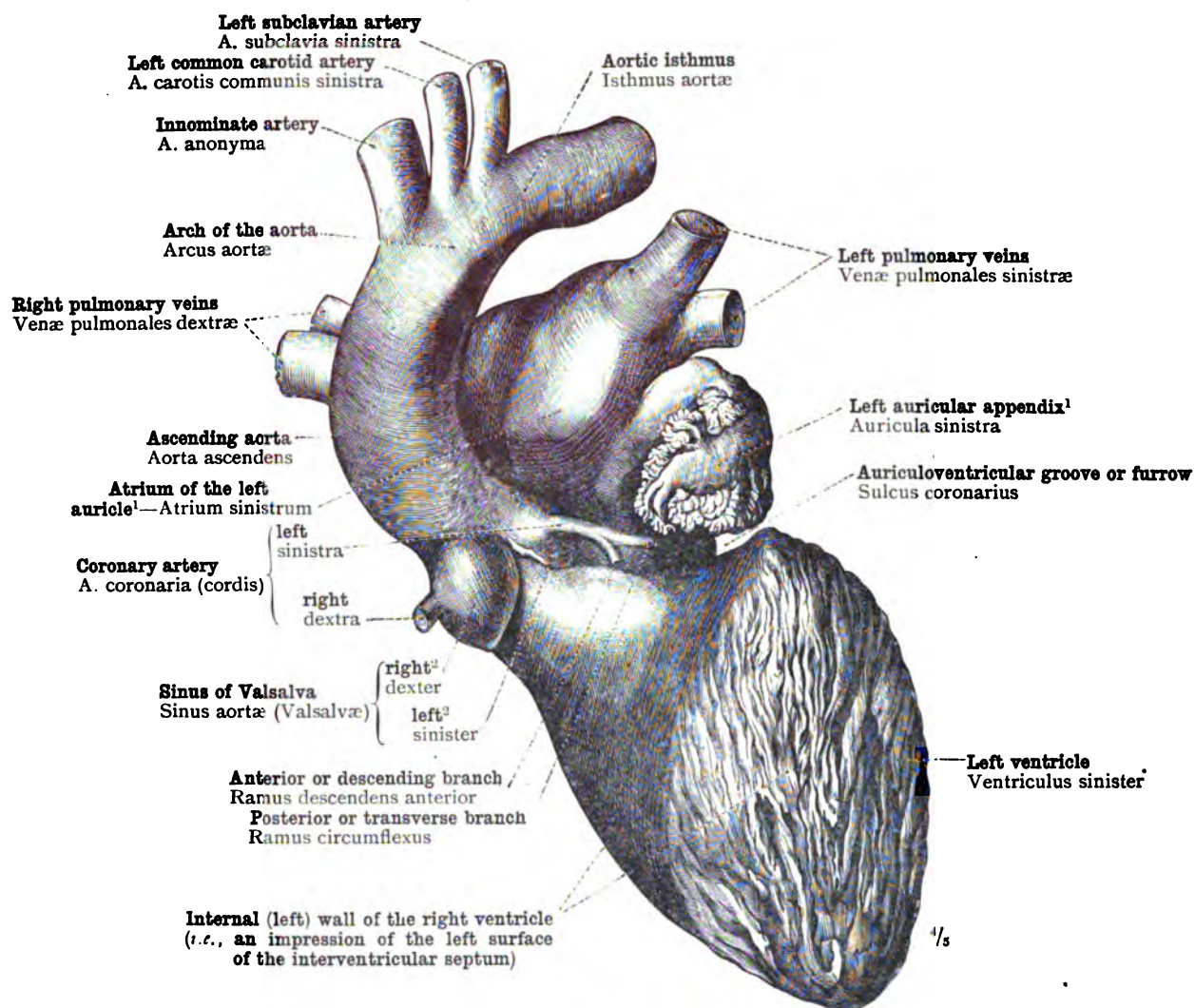
<sup>1</sup> Called also the *right or large azygos vein*.<sup>2</sup> See Appendix, note <sup>113</sup>.<sup>3</sup> See Appendix, note <sup>112</sup>.<sup>4</sup> See note 4 to p. 564.

FIG. 956.—CAST OF THE INTERIOR OF THE RIGHT SIDE OF THE HEART, WITH THE MAIN TRUNK AND THE BIFURCATION OF THE PULMONARY ARTERY, THE PROXIMAL EXTREMITIES OF THE SUPERIOR AND INFERIOR VENÆ CAVÆ, AND THE CORONARY SINUS, SEEN FROM THE INNER SIDE.

The Configuration of the Right Side of the Heart.



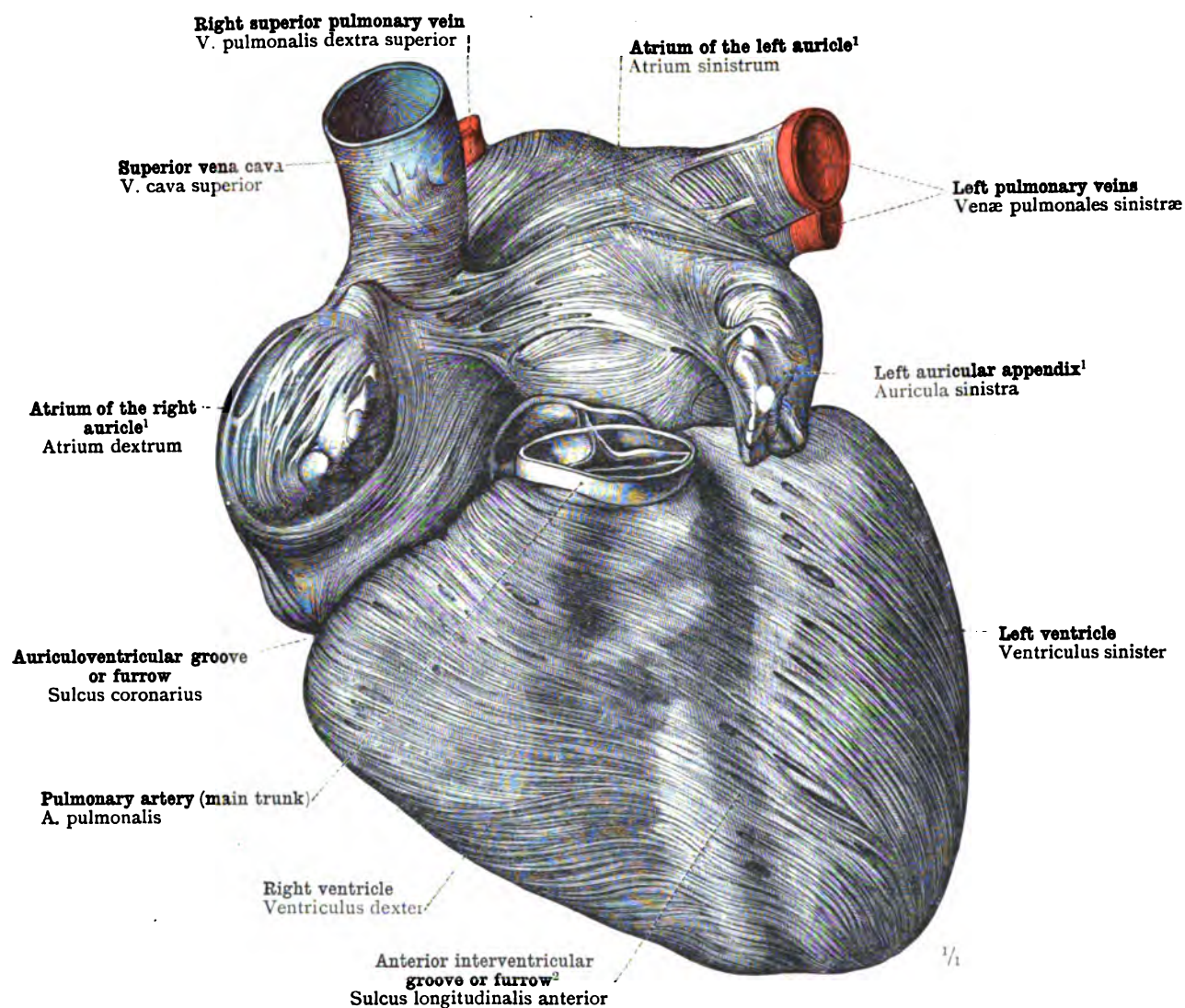


<sup>1</sup> See Appendix, note 113.  
<sup>2</sup> Regarding the position and nomenclature of the several sinuses of Valsalva, the same considerations apply as regarding the several semilunar or sigmoid flaps of the aortic valve—see note <sup>2</sup> to p. 564.—Tr.  
<sup>3</sup> Called by Macalister the *anterior interventricular artery*.

FIG. 957.—CAST OF THE INTERIOR OF THE LEFT SIDE OF THE HEART, WITH THE AORTA TO A POINT A LITTLE BEYOND THE ISTHMUS, THE COMMENCEMENT OF THE CORONARY ARTERIES, AND THE PROXIMAL EXTREMITIES OF THE SUPERIOR AND INFERIOR VENÆ CAVÆ, SEEN FROM THE INNER SIDE.

The Configuration of the Left Side of the Heart.





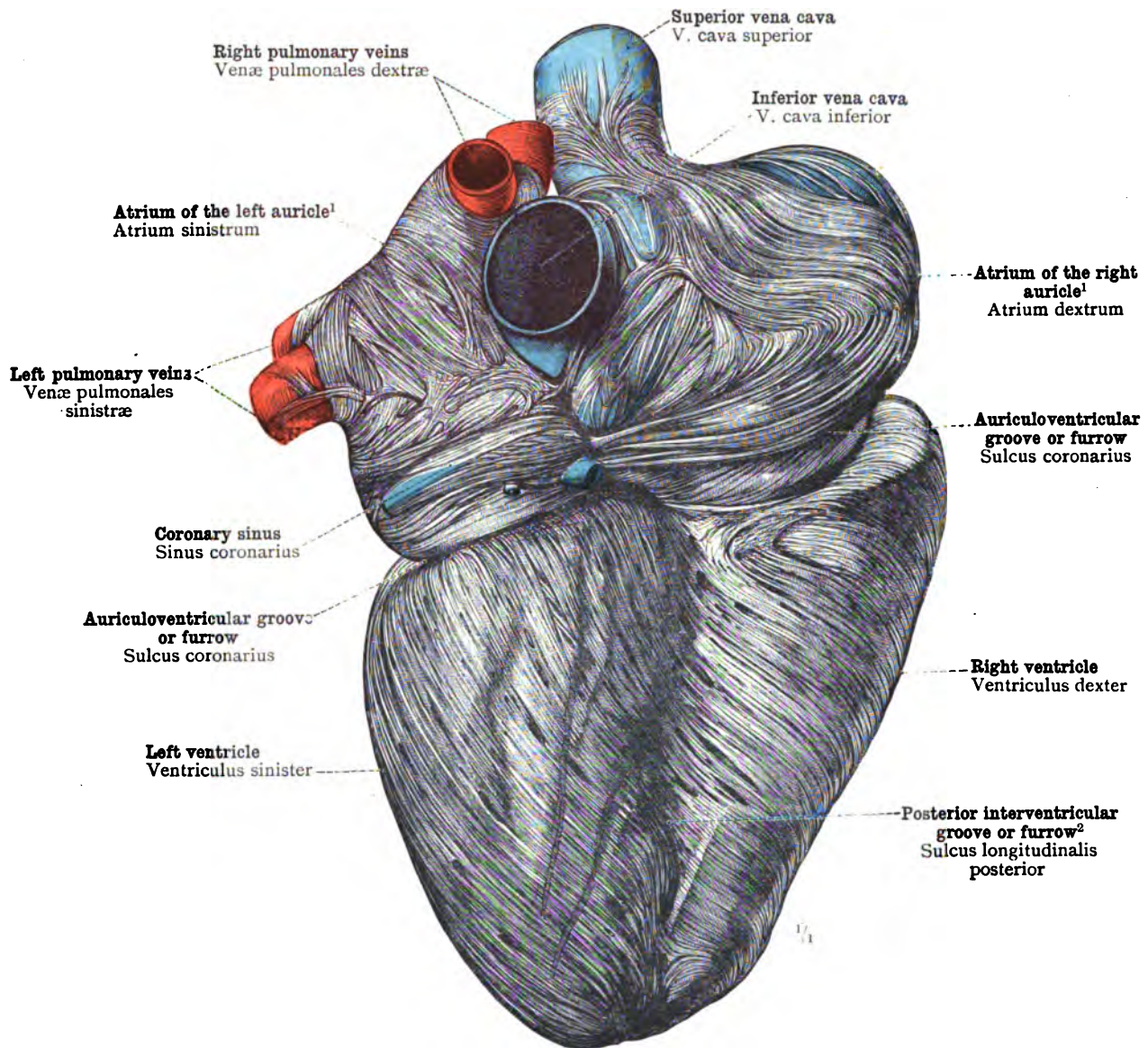
<sup>1</sup> See Appendix, note <sup>113</sup>.

<sup>2</sup> See note 5 to p. 566.

FIG. 958.—SUPERFICIAL FIBRES OF THE MYOCARDIUM ON THE ANTERIOR SURFACE OF THE VENTRICLES AND AURICLES.

The heart was injected with tallow prior to dissection.

### The Myocardium.



<sup>1</sup> See Appendix, note 113.

<sup>2</sup> See note 5 to p. 566.

FIG. 959.—SUPERFICIAL FIBRES OF THE MYOCARDIUM ON THE POSTERIOR SURFACE OF THE VENTRICLES AND AURICLES.

The preparation shown in Fig. 958, seen from behind.

The Myocardium.

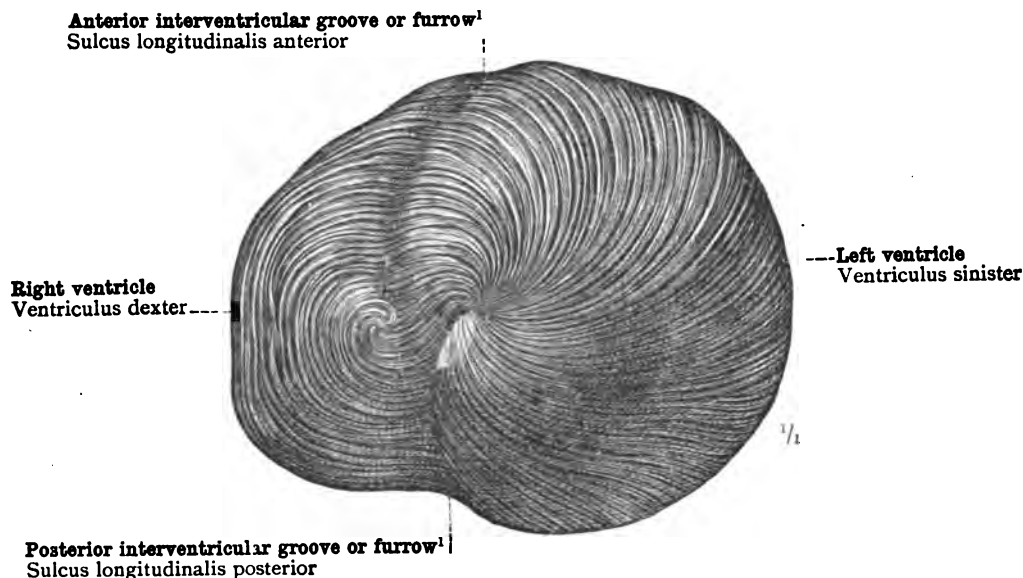


FIG. 960.—VORTEX OR WHORL OF THE HEART, VORTEX CORDIS, AT THE APEX OF THE \*CONE OF THE HEART (*i.e.*, OF THE VENTRICULAR PORTION OF THE HEART—see note <sup>12</sup> to p. 563); SEEN FROM BELOW.

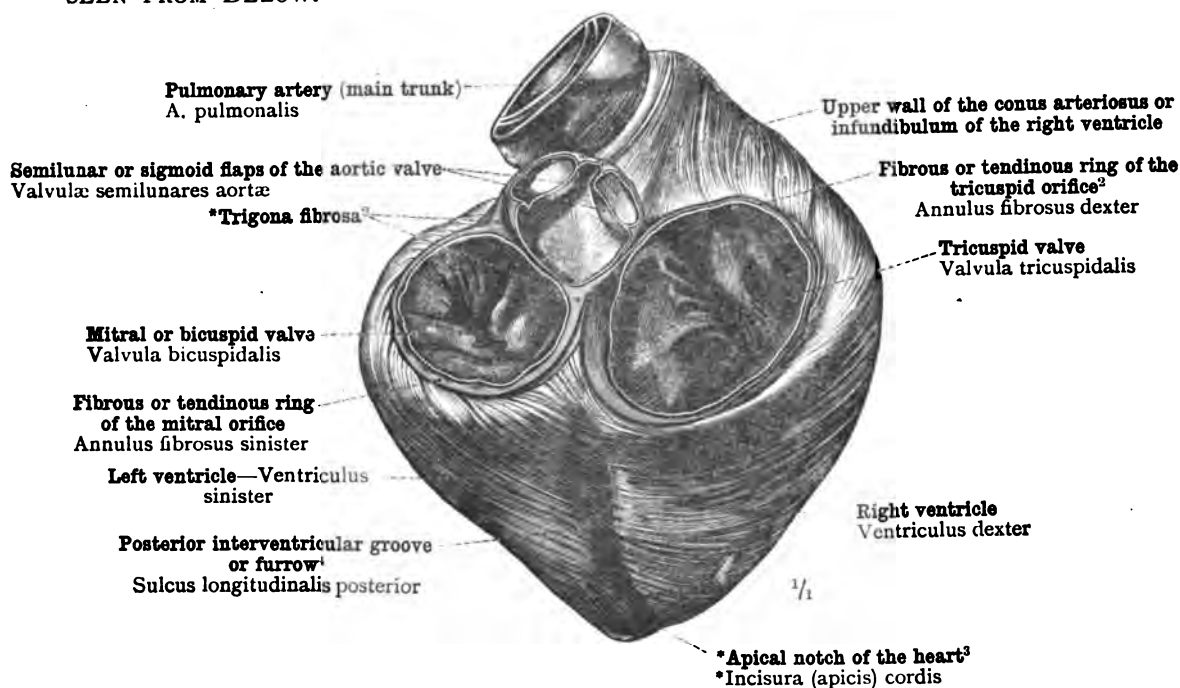


FIG. 961.—THE \*CONE OF THE HEART (*i.e.*, THE VENTRICULAR PORTION OF THE HEART—see note <sup>12</sup> to p. 563) SEEN FROM ABOVE AND BEHIND, WITH THE SUPERFICIAL FIBRES OF THE MYOCARDIUM LAID BARE; THE FIBROUS OR TENDINOUS RINGS OF THE AURICULOVENTRICULAR APERTURES, ANNULI FIBROSI, AND THE \*TRIGONA FIBROSA.<sup>2</sup>

<sup>1</sup> See note 5 to p. 566.

<sup>2</sup> *Annuli Fibrosi* and \**Trigona Fibrosa*.—The *fibrous or tendinous rings* of the auriculoventricular apertures are by Macalister called *zone tendinose*. Connected with these are the \**trigona fibrosa* (the term is not used by English anatomists). These are strong triangular masses of fibrocartilage. The *right \*trigonum fibrosum*, situated in the angle between the aortic and the two auriculoventricular openings, corresponds to the *os cordis* of certain mammals, such as the ox. The *left \*trigonum fibrosum* lies in front of the mitral orifice, in the angle between that orifice and the left side of the aortic orifice.—Tr.

<sup>3</sup> See note 5 to p. 562.

<sup>4</sup> See note 5 to p. 566.

**Vortex cordis**—Vortex or whorl of the heart.—**Annuli fibrosi**—Fibrous or tendinous rings of the auriculoventricular apertures.



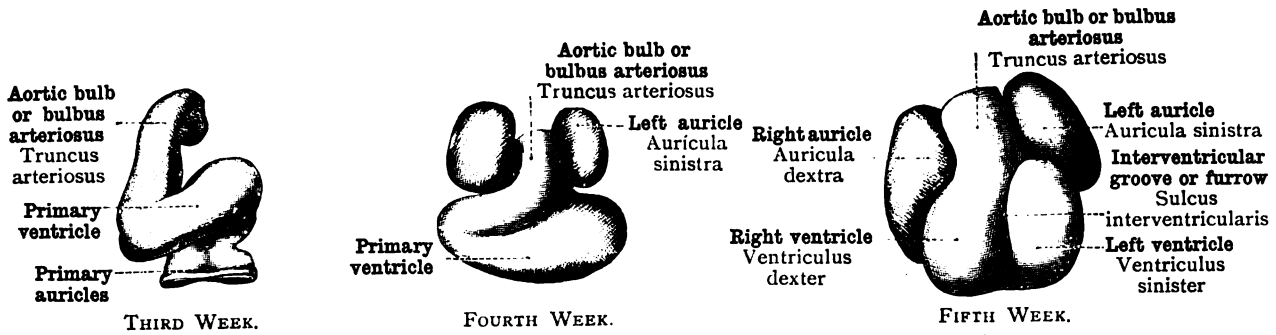


FIG. 962.—STAGES IN THE DEVELOPMENT OF THE HUMAN HEART IN THE FIRST WEEKS OF INTRA-UTERINE LIFE. (ENLARGED. AFTER W. HIS.)

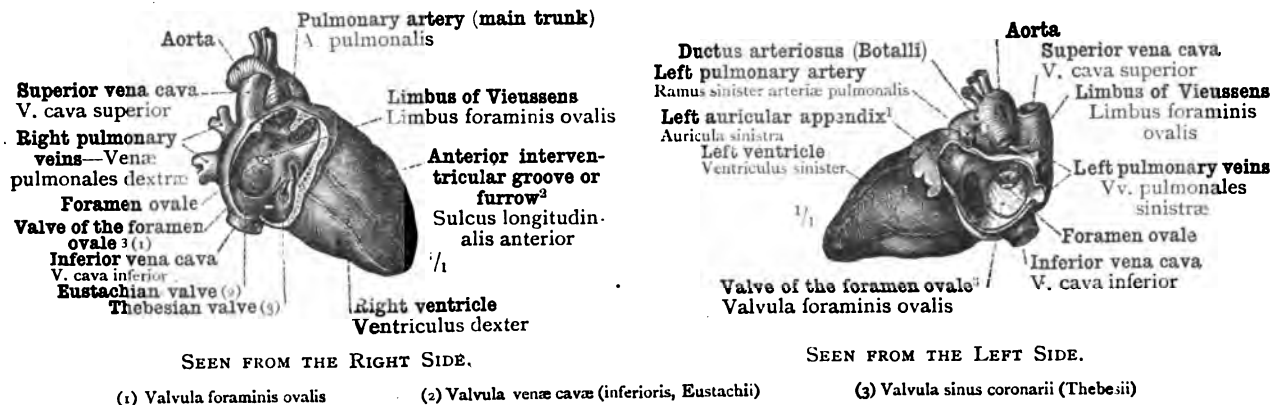


FIG. 963.—FORAMEN OVALE SEPTI ATRIORUM, THE FORAMEN OVALE OF THE INTERAURICULAR SEPTUM, AS SEEN IN THE HEART OF A HUMAN FETUS AT THE END OF THE SIXTH MONTH (MONTHS OF FOUR WEEKS EACH) WHEN THE FREE (OUTER) WALLS OF BOTH AURICLES HAVE BEEN REMOVED.

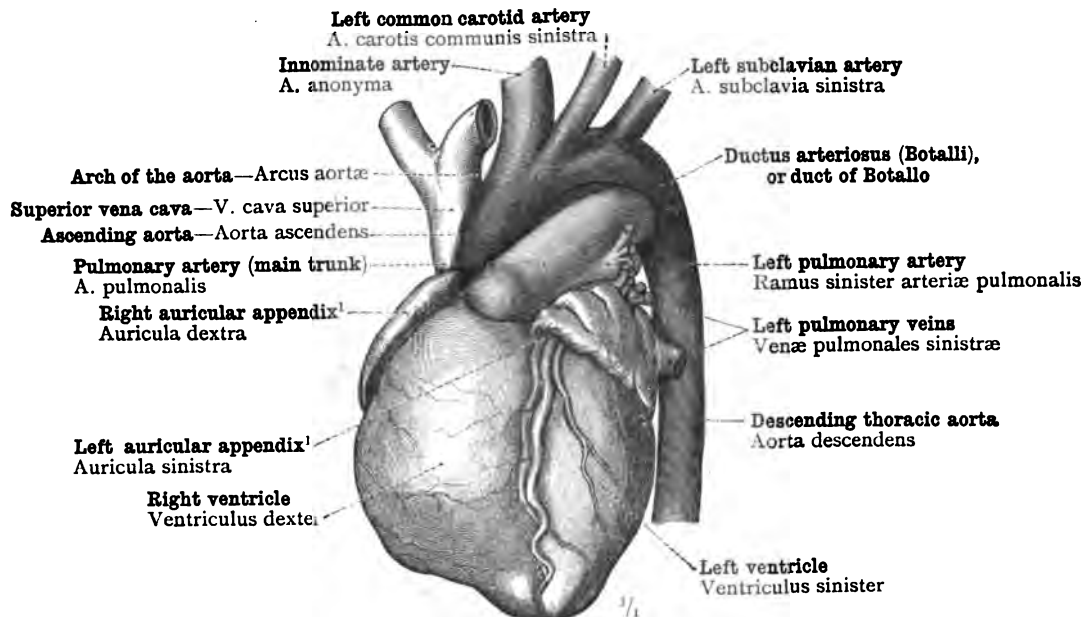
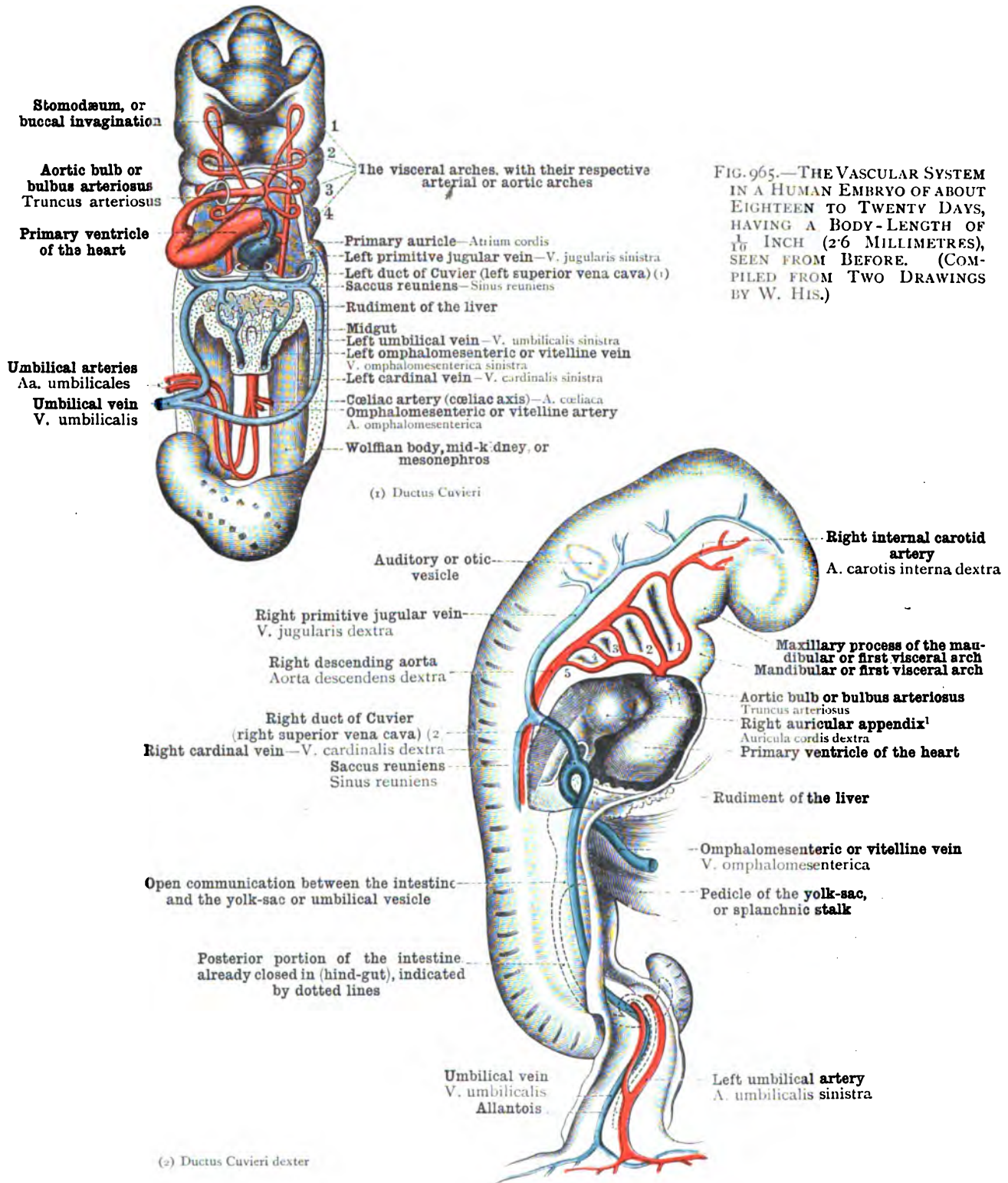


FIG. 964.—THE HEART (INJECTED) OF AN INFANT BORN AT FULL TERM, SEEN FROM THE LEFT SIDE AND BEFORE. The ductus arteriosus or duct of Botallo is seen to be directly continuous with the main trunk of the pulmonary artery.

<sup>1</sup> See Appendix, note 113.

<sup>3</sup> Called by Macalister *valvula sinistra sacci venosi*.

<sup>2</sup> See note 5 to p. 566.



**FIG. 966.—CONDITION OF THE HEART AND VASCULAR SYSTEM IN A HUMAN EMBRYO OF THE TWENTY-SECOND OR TWENTY-THIRD DAY, HAVING A BODY-LENGTH OF  $\frac{1}{6}$  INCH (4.2 MILLIMETRES), SEEN FROM THE RIGHT SIDE. (AFTER W. HIS.)**

**The Vascular System at the End of the Third and in the Beginning of the Fourth Week of Intra-uterine Life.**

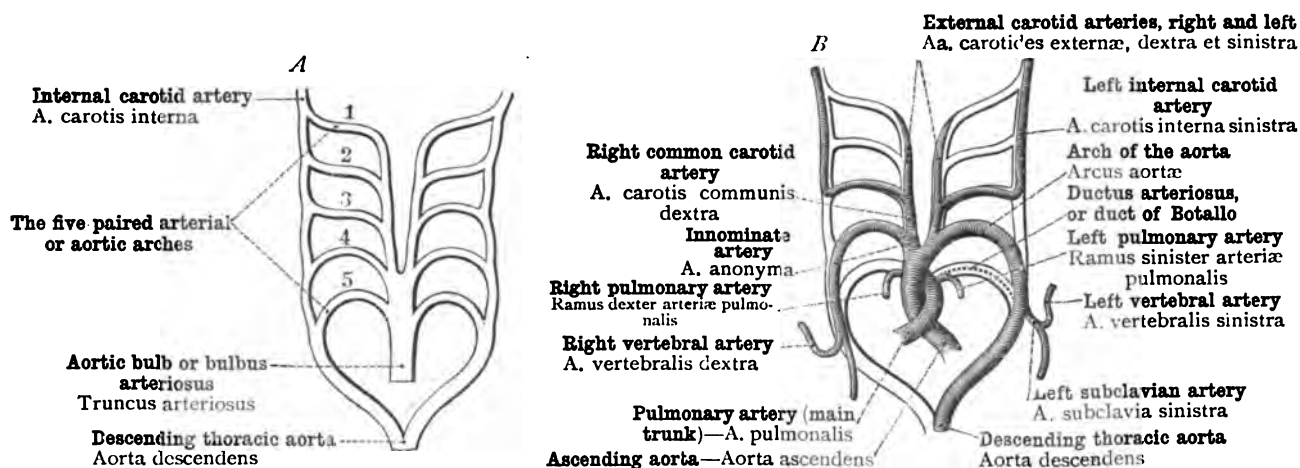


FIG. 967.—DIAGRAMMATIC REPRESENTATION OF THE TRANSFORMATION OF THE ARTERIAL OR AORTIC ARCHES. *A*. THEIR ORIGINAL ARRANGEMENT. *B*. THEIR SUBSEQUENT TRANSFORMATION INTO THE PERMANENT ARTERIAL TRUNKS. (AFTER RATHKE, WITH A SLIGHT MODIFICATION BY F. HOCHSTETTER.)

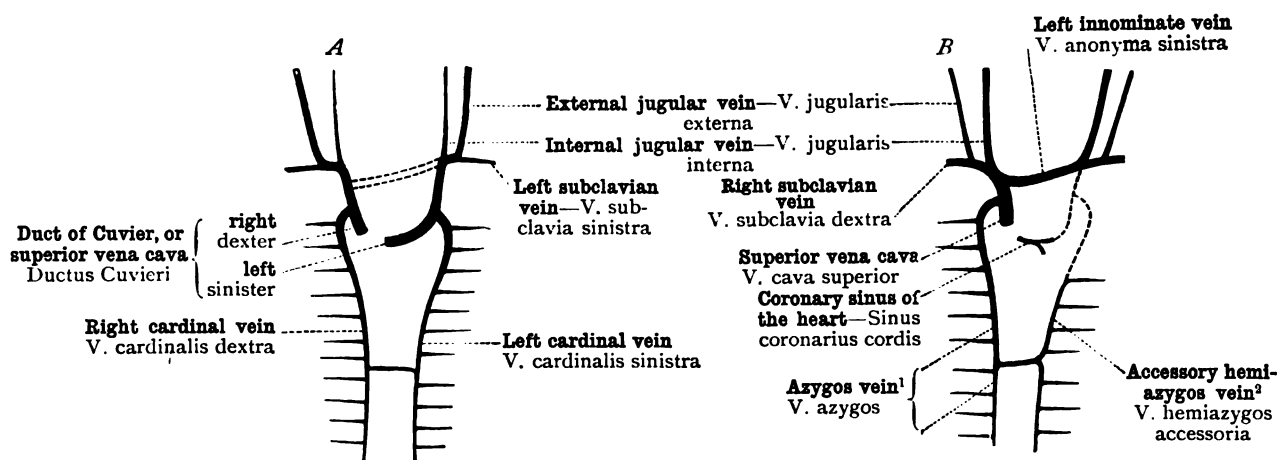


FIG. 968.—DIAGRAMMATIC REPRESENTATION OF THE RUDIMENTARY ARRANGEMENT OF THE SYSTEMIC SYSTEM OF VEINS (*A*), AND OF THE TRANSFORMATION OF THE SYSTEM OF THE SUPERIOR VENÆ CAVÆ (*B*). (AFTER RATHKE, WITH MODIFICATIONS BY F. HOCHSTETTER.)

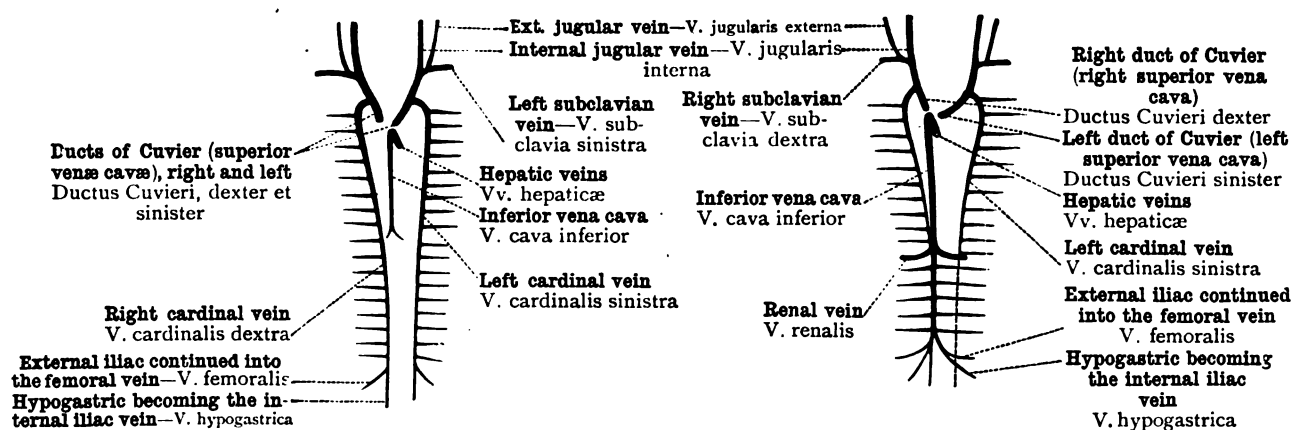


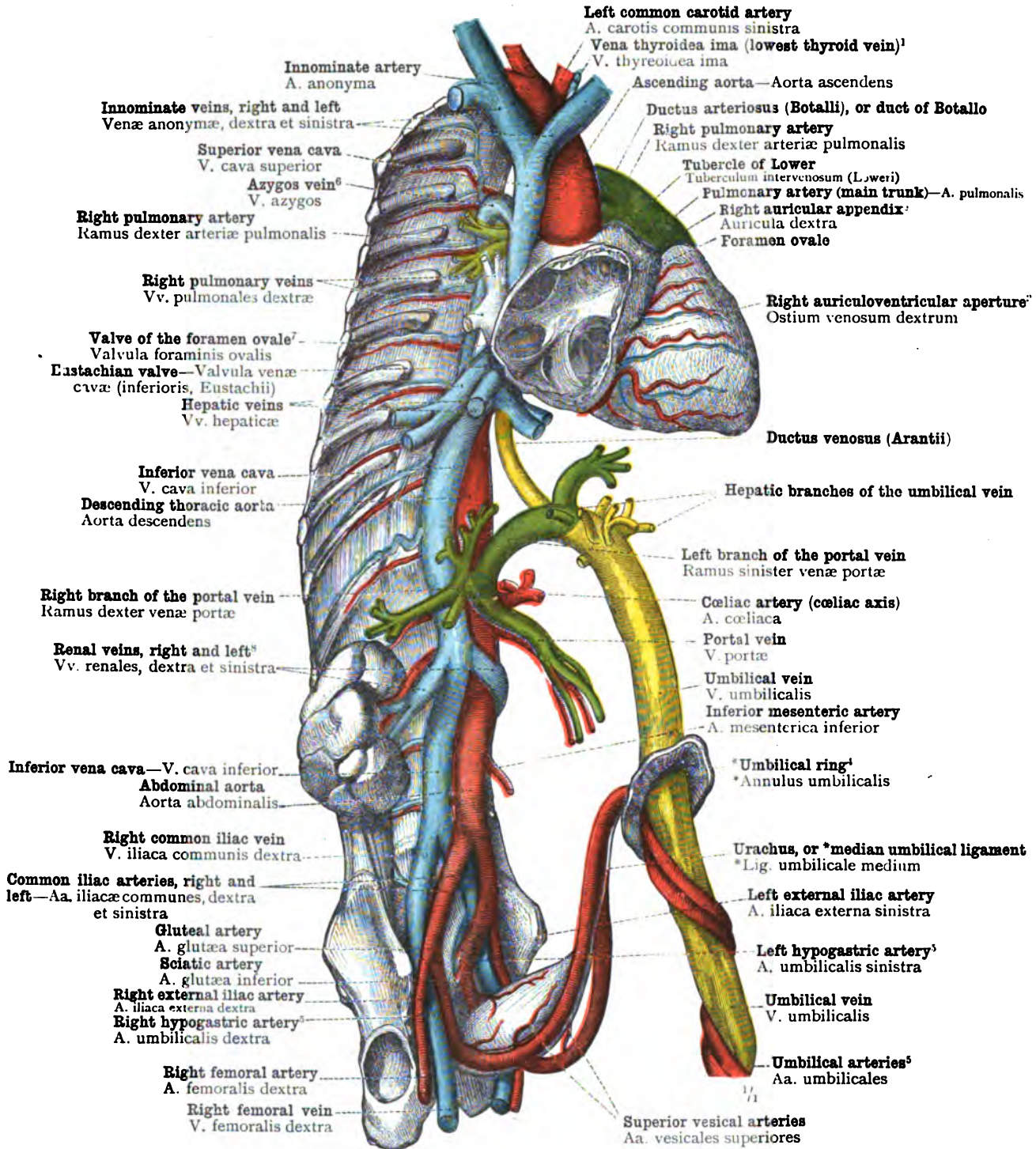
FIG. 969.—DIAGRAMMATIC REPRESENTATION OF THE DEVELOPMENT OF THE INFERIOR VENA CAVA. (AFTER RATHKE, IMPROVED BY F. HOCHSTETTER.)

<sup>1</sup> Called also the *right* or *large azygos vein*.

<sup>2</sup> Called also the *left upper azygos vein*.

The Rudimentary Condition of the Arterial and Venous Systems, and the Transformations by which the Normal Adult Condition of these Systems is attained.





<sup>1</sup> Companion to the *thyroidea ima* artery—see note <sup>1</sup> to p. 590.—Tr.

<sup>3</sup> Or *tricuspid orifice*.

<sup>6</sup> Called also the *right* or *large azygos vein*.

<sup>8</sup> Sometimes called the *emulgent veins*. See note 3 to p. 595.—Tr.

<sup>4</sup> See Appendix, note <sup>119</sup>.

<sup>7</sup> Called by Macalister *valvula sinistra sacci venosi*.

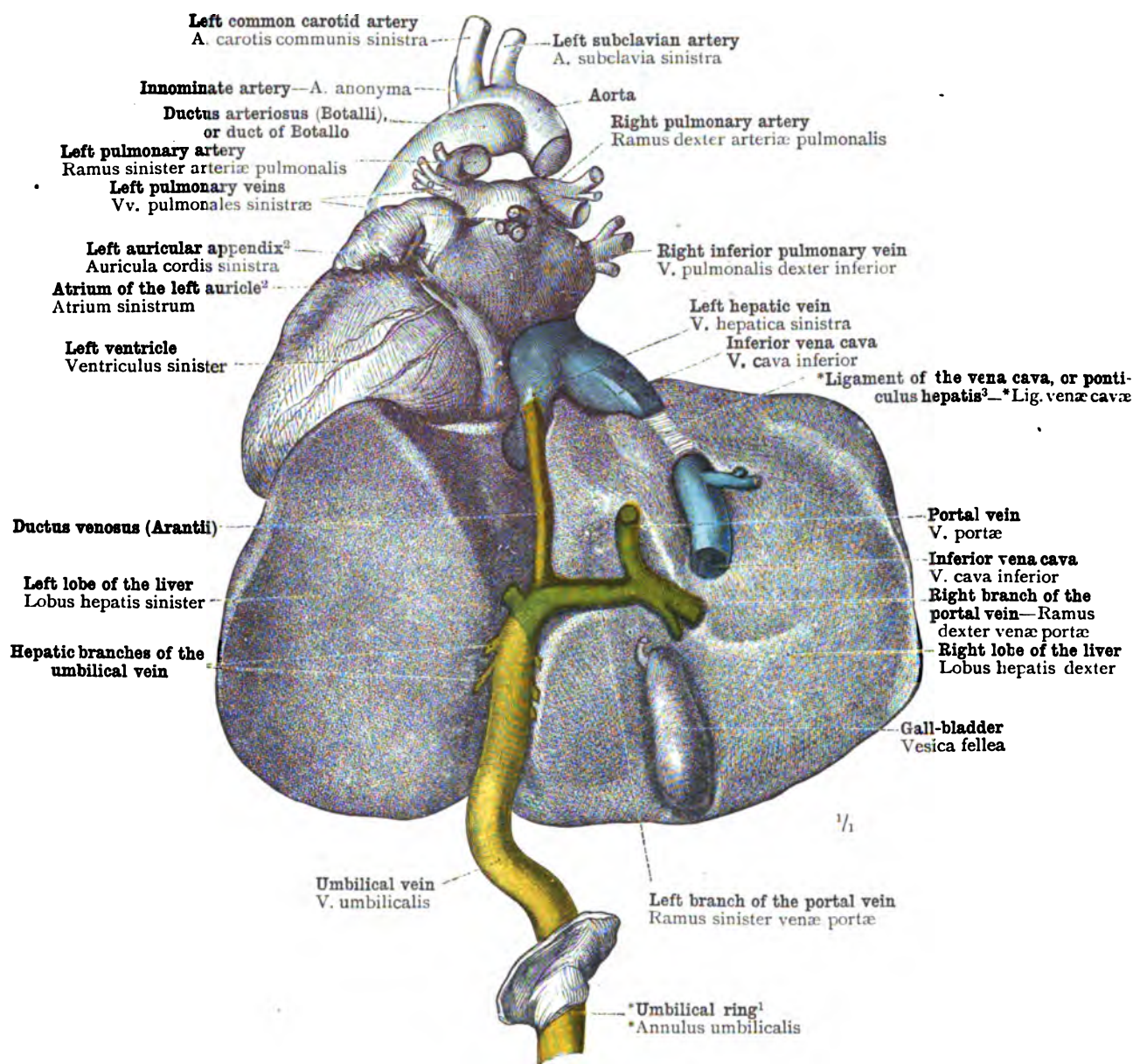
<sup>2</sup> See Appendix, note <sup>113</sup>.

<sup>5</sup> See Appendix, note <sup>120</sup>.

FIG. 970.—THE CIRCULATORY APPARATUS OF THE FŒTUS, AS SEEN IN AN INFANT STILL-BORN AT FULL TERM. VIEWED FROM THE RIGHT SIDE.

The right wall of the right auricle has been removed, to show the foramen ovale and its valve, and also the Eustachian valve. The umbilical vein with its hepatic branches and the ductus venosus (Arantii) are coloured yellow; the portal vein, the pulmonary arteries, and the ductus arteriosus (Botalli), are coloured green.

### The Fœtal Circulatory Apparatus.



<sup>1</sup> See Appendix note 119.

<sup>2</sup> See Appendix, note 113.

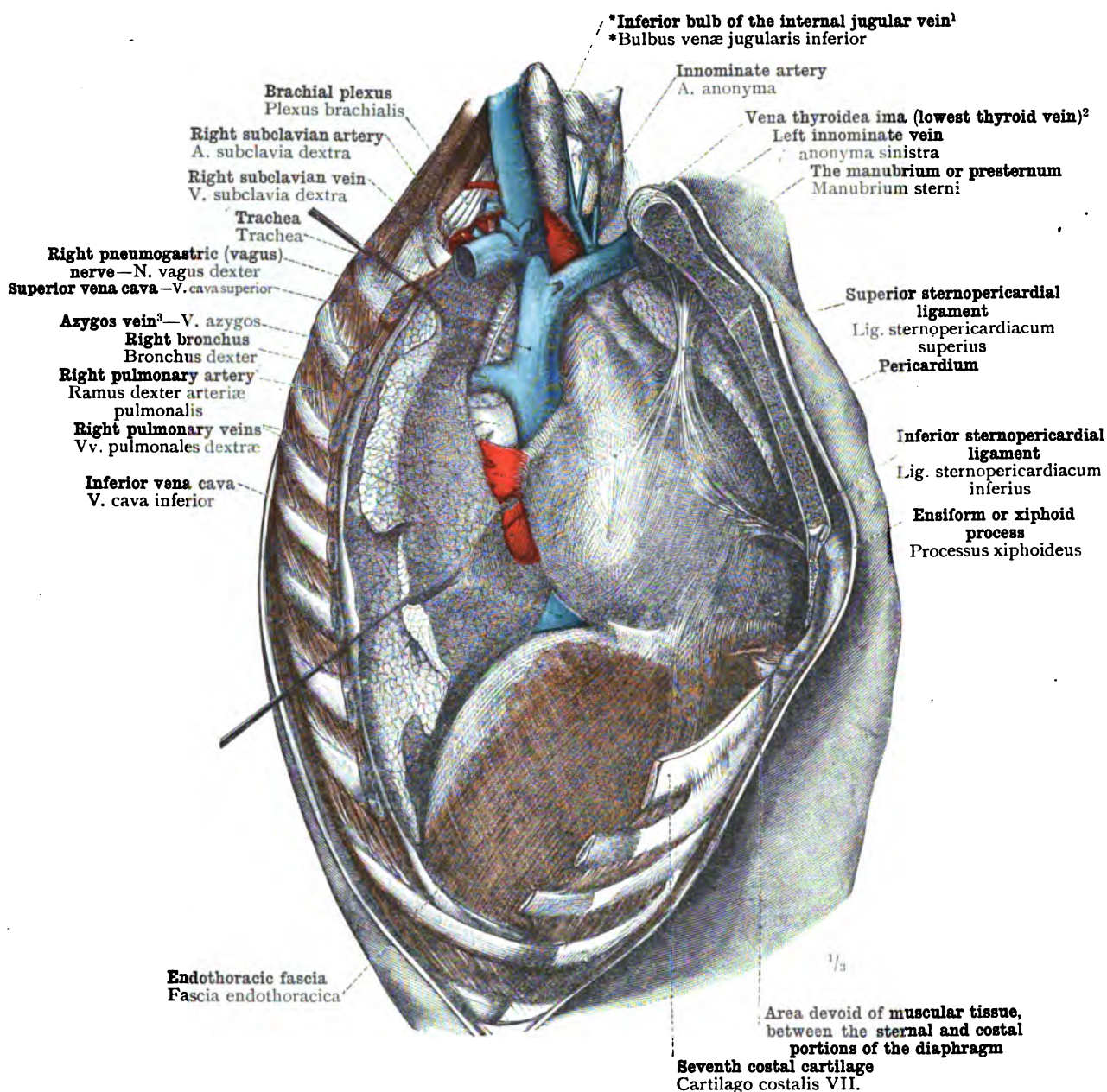
<sup>3</sup> See Appendix, to Part IV., note 17.

FIG. 971.—THE LIVER AND THE HEART OF AN INFANT STILL-BORN AT FULL TERM. THE UMBILICAL VEIN, VENA UMBILICALIS, FROM THE \*UMBILICAL RING (see *Appendix*, note <sup>119</sup>) TO ITS TERMINATION IN THE LEFT BRANCH OF THE PORTAL VEIN, AND THE HEPATIC BRANCHES GIVEN OFF FROM THE UMBILICAL VEIN IN THE UMBILICAL FISSURE OF THE LIVER; THE DIVISION OF THE PORTAL VEIN, VENA PORTÆ, INTO ITS RIGHT AND LEFT BRANCHES; THE ORIGIN OF THE DUCTUS VENOSUS (ARANTII) IN THE LEFT BRANCH OF THE PORTAL VEIN, AND ITS TERMINATION IN THE LEFT HEPATIC VEIN.

The liver is represented as seen from below ; the heart, as seen from behind. The short remaining portion of the trunk of the portal vein has been turned upwards.

### The Foetal Circulation in Relation to the Liver.





<sup>1</sup> See Appendix, note 121.

<sup>2</sup> Companion to the *thyroidea ima* artery—see note <sup>1</sup> to p. 590.—Tr.  
<sup>3</sup> Called also the *right* or *large azygos vein*.

FIG. 972.—POSITION AND RELATIONS OF THE PERICARDIUM; ITS CONNEXIONS WITH THE ENDOTHORACIC FASCIA AND WITH THE DIAPHRAGM. PROLONGATION OF THE FIBROUS LAYER OF THE PERICARDIUM TO FORM TUBULAR INVESTMENTS FOR THE AORTA, THE SUPERIOR VENA CAVA, AND THE RIGHT PULMONARY VEINS. THE SUPERIOR AND INFERIOR STERNOPERICARDIAL LIGAMENTS. SEEN FROM THE RIGHT SIDE AND BEFORE.

The sternum having been divided sagittally in the median plane, its left half was drawn a little forwards; the right wall of the thorax was removed as far down as the tenth rib; and the right lung was drawn backwards as far as possible, in order to display the vessels forming its root.

#### The Pericardium.—The Sternopericardial Ligaments.

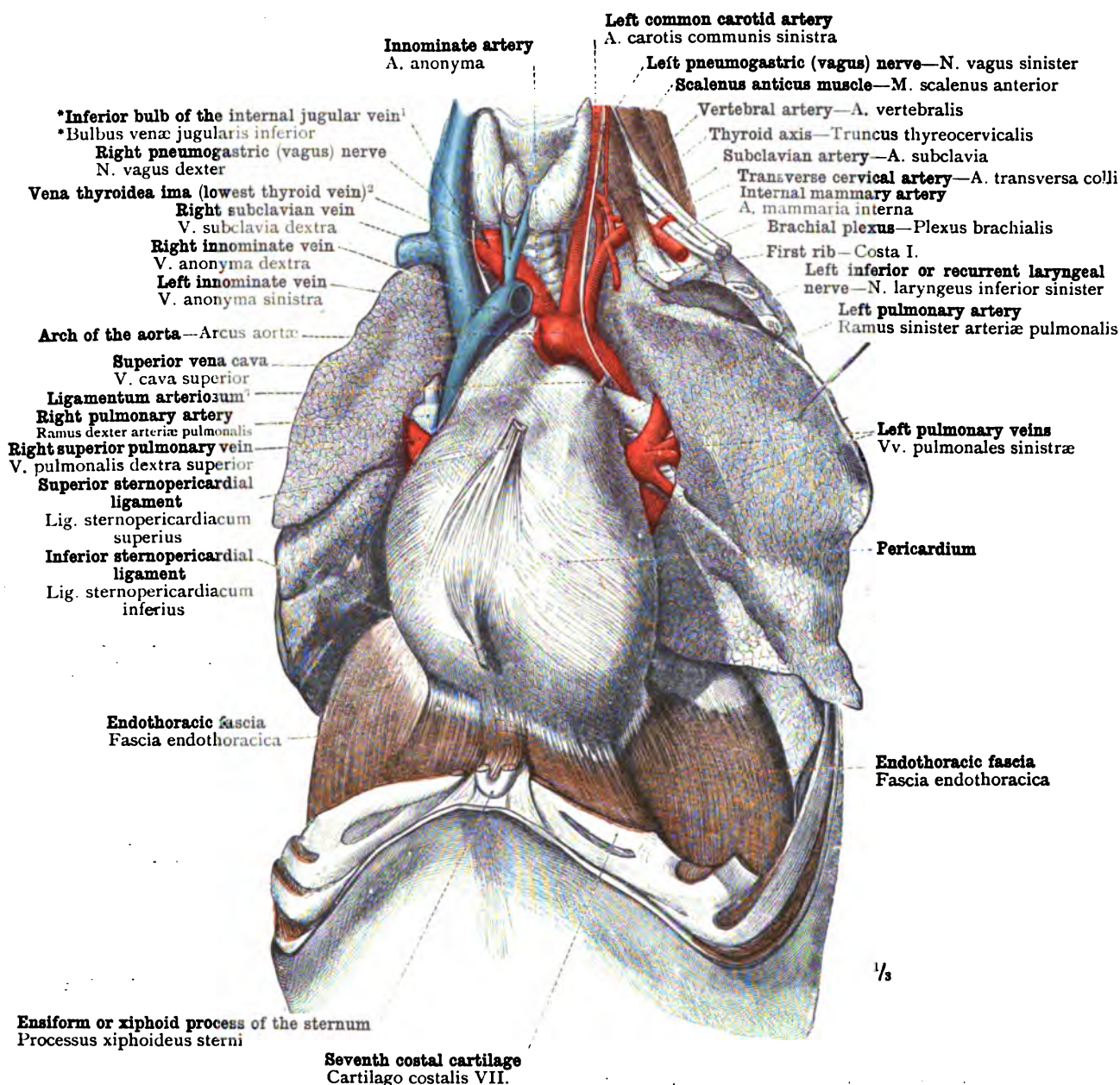
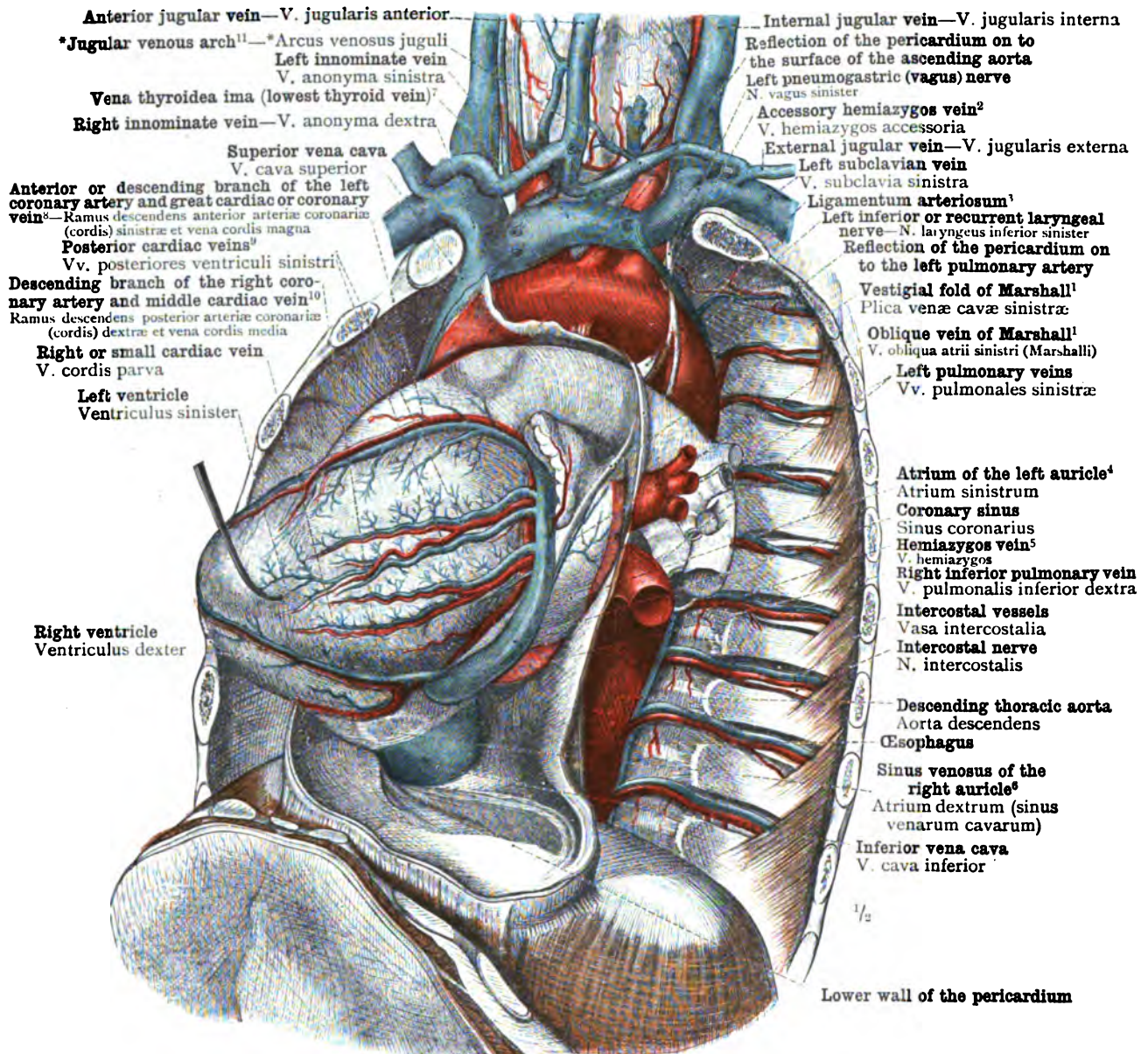


FIG. 973.—POSITION AND RELATIONS OF THE PERICARDIUM; ITS CONNEXIONS WITH THE ENDOTHORACIC FASCIA AND WITH THE DIAPHRAGM; PROLONGATION OF ITS FIBROUS LAYER TO FORM TUBULAR INVESTMENTS FOR THE ARCH OF THE AORTA, THE LEFT PULMONARY ARTERY, AND THE LEFT PULMONARY VEINS. ON THE ANTERIOR WALL OF THE PERICARDIUM, THE REMAINS OF THE STERNOPERICARDIAL LIGAMENTS, WHICH HAVE BEEN DIVIDED, ARE VISIBLE. SEEN FROM THE LEFT SIDE AND BEFORE.

In the preparation shown in Fig. 972, the left wall of the thorax was removed to the same extent as the right wall had already been cut away, and both lungs were drawn backwards as far as possible, in order to display the vessels of the roots of the lungs.

#### The Pericardium.—The Sternopericardial Ligaments.





<sup>1</sup> See Appendix, note 122.

<sup>4</sup> See Appendix, note 113.

<sup>7</sup> Companion to the *thyroidea ima* artery—see note <sup>1</sup> to p. 590.—Tr.

<sup>8</sup> Called by Macalister the *anterior interventricular artery and vein*.

<sup>10</sup> Called by Macalister the *posterior interventricular artery and vein*.

<sup>2</sup> Called also the *left upper azygos vein*.

<sup>5</sup> Known also as the *left lower or small azygos vein*.

<sup>3</sup> See Appendix, note 111.

<sup>6</sup> See Appendix, note 115.

<sup>9</sup> Called by Macalister the *left marginal veins*.

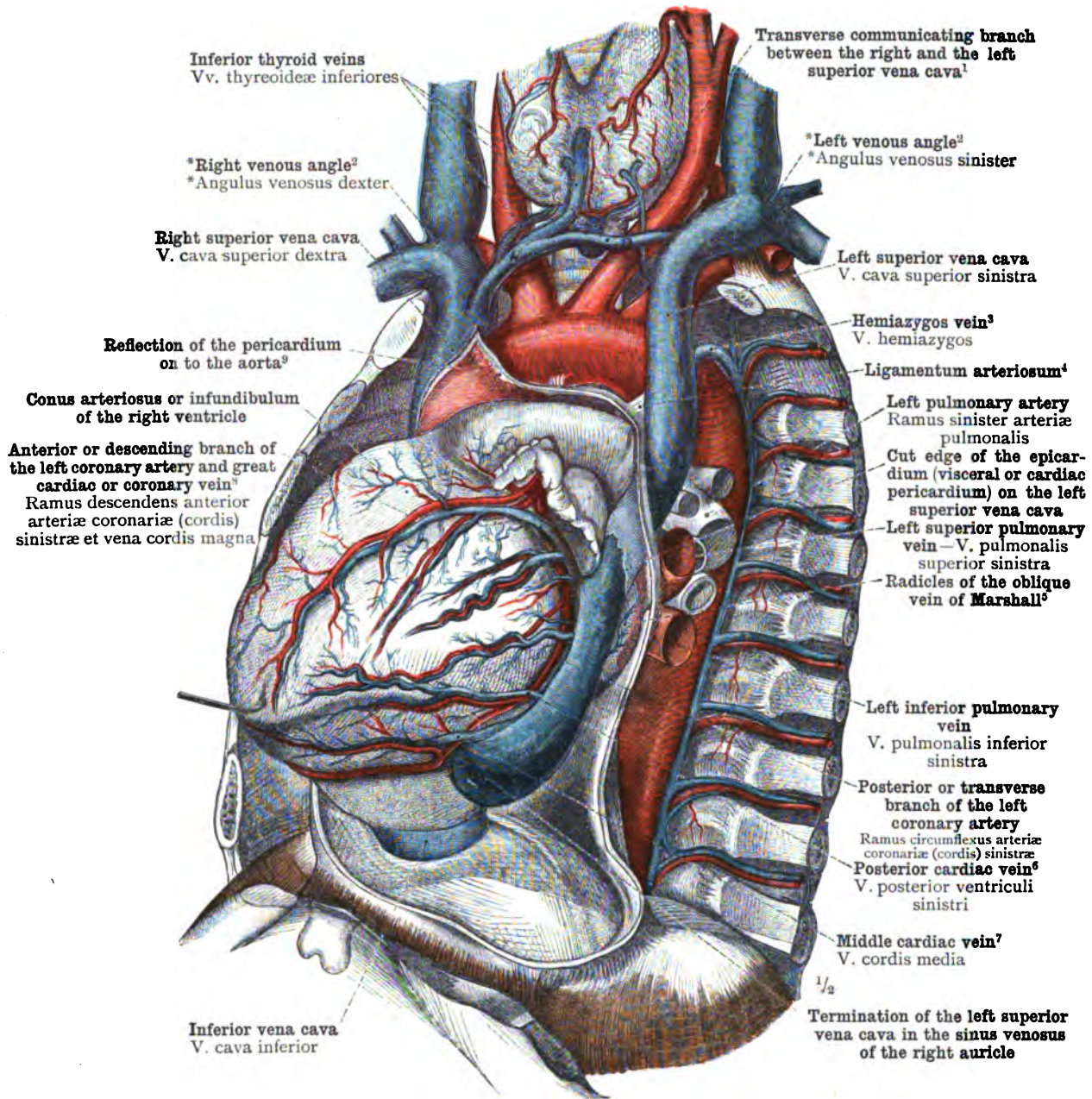
<sup>11</sup> See Appendix, note 123.

FIG. 974.—THE VESTIGIAL FOLD (PLICA VENÆ CAVÆ SINISTRÆ—see Appendix, note 123), AND ITS RELATION TO THE OBLIQUE VEIN OF MARSHALL (VENA OBLIQUA ATRII SINISTRI MARSHALLI—see Appendix, note 115). SEEN FROM BEFORE, BELOW, AND THE LEFT SIDE.

The sternum having been removed and the greater part of the left lateral wall of the thorax having been cut away, the front and the left side of the pericardium were removed by incisions passing along the attachments of the membrane to the great vessels and to the diaphragm. The heart was drawn upwards and to the right, in order to display its posterior surface (facies diaphragmatica). The coronary vessels were dissected out by partial removal of the epicardium (visceral or cardiac pericardium).

### Pericardium, Epicardium, Vestigial Fold, Cardiac Veins.





<sup>1</sup> See Appendix, note <sup>124</sup>.

<sup>2</sup> See Appendix, note <sup>125</sup>.

<sup>3</sup> This represents the combined *upper* and *lower left azygos veins* of the normal body.—Tr.

<sup>4</sup> See Appendix, note <sup>117</sup>.

<sup>5</sup> Called by Macalister the *left marginal vein*.

<sup>6</sup> *Vena Obliqua Atrii Sinistri (Marshalli)*. See Appendix, note <sup>117</sup>.

<sup>7</sup> Called by Macalister the *anterior interventricular artery and vein*.

<sup>8</sup> Called by Macalister the *posterior interventricular vein*.

<sup>9</sup> Or junction of the *parietal* and *visceral* pericardium. (See also note <sup>2</sup> to p. 565.)—Tr.

FIG. 975.—PERSISTENT LEFT SUPERIOR VENA CAVA (VENA CAVA SUPERIOR SINISTRA), AND ITS RELATIONS TO THE CARDIAC VEINS. SEEN FROM BEFORE, BELOW, AND THE LEFT SIDE.

The hemiazygos vein (see note <sup>3</sup> above) opens from behind into the left superior vena cava at the level of the body of the fourth dorsal vertebra. The comparatively slender transverse communicating branch between the right and the left superior vena cava, from which, after the obliteration of the proximal portion of the left superior vena cava, the transverse portion of the left innominate should in the natural course of development have been formed, receives, in addition to others, the inferior thyroid veins.

The thoracic cavity and the pericardium have been opened, and the heart has been drawn upwards and to the right, as in the preparation shown in Fig. 974. By the partial removal of the epicardium (visceral or cardiac pericardium), the left superior vena cava was laid bare in its course along the back of the left auricle and in the auriculo-ventricular groove, up to its termination in the sinus venosus of the right auricle; and its tributary veins and the branches of the coronary arteries were also dissected out.

### Persistent Left Superior Vena Cava.



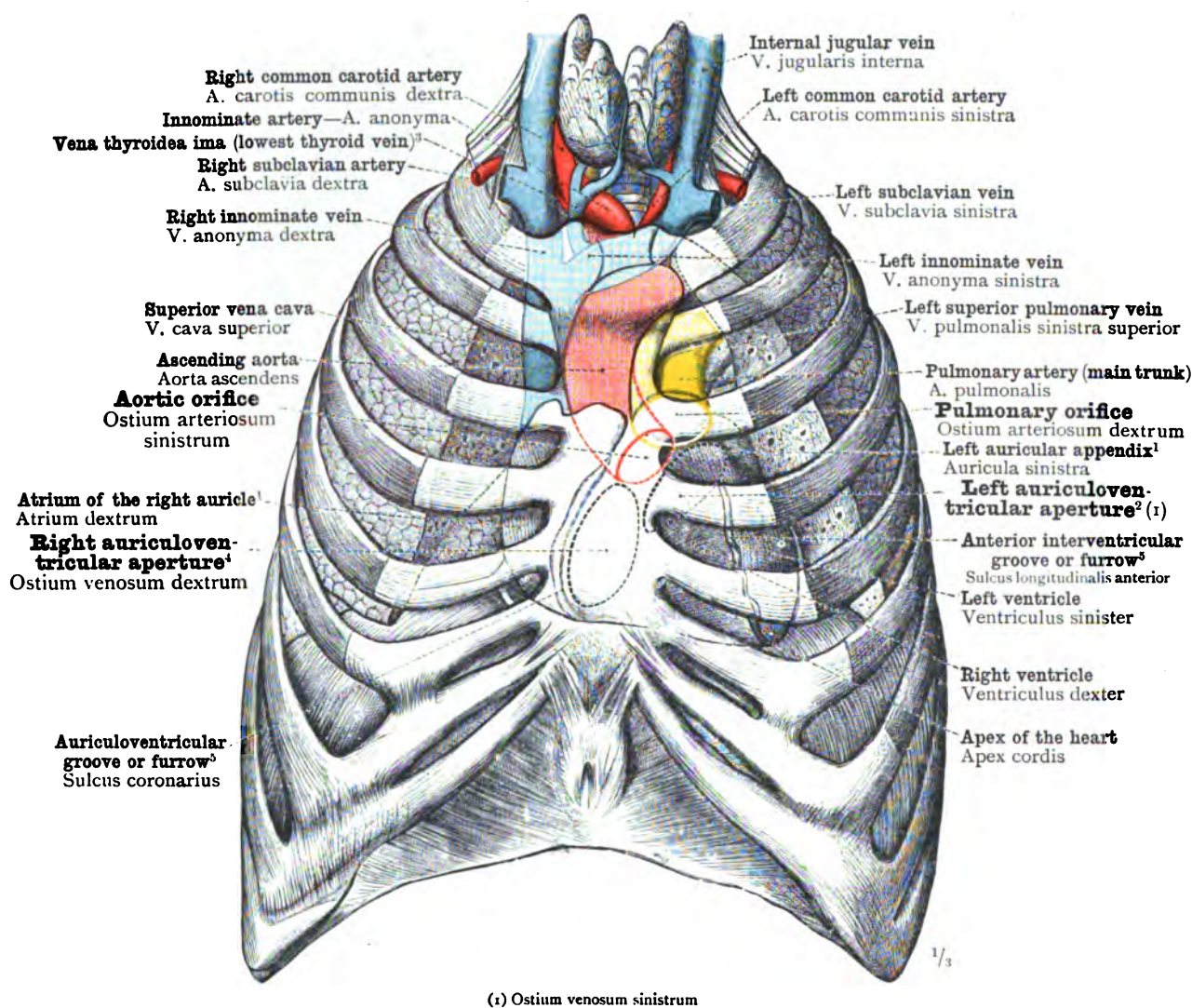
<sup>1</sup> See Appendix, note 113.<sup>3</sup> Companion to the *thyroidea ima* artery—see note <sup>1</sup> to p. 590.—Tr.<sup>5</sup> See note 5 to p. 566.<sup>2</sup> Or *mitral orifice*.<sup>4</sup> Or *tricuspid orifice*.

FIG. 976.—POSITION OF THE HEART AND THE GREAT VESSELS AND OF THE CARDIAC ORIFICES, AND THE PROJECTION-OUTLINES OF THESE STRUCTURES ON THE ANTERIOR WALL OF THE THORAX.

After preliminary hardening with formalin, the pericardium was exposed in the intercostal spaces.

The sternum was then sawn across horizontally at the level of the second and the sixth intercostal spaces, and was removed with a sufficient extent of the attached ribs and rib-cartilages to lay the heart fully bare. The excised portion of the wall of the thorax having been replaced in its position, the preparation was then photographed, first with, and then without, the excised segment, and the projection-outline of the heart was thus determined. By means of suitable incisions, the position and extent of the respective orifices was determined, as well as their projection-outlines upon the anterior surface of the heart. The cartilage of the eighth rib is in this specimen directly attached to the sternum; and the innominate and the left common carotid artery arise from the aorta by a common trunk.

Position and Projection-Outlines of the Heart, the Cardiac Orifices, and the Great Vessels.

ARTERIA PULMONALIS  
THE PULMONARY ARTERY

ARTERIÆ TRUNCI  
THE ARTERIES OF THE TRUNK



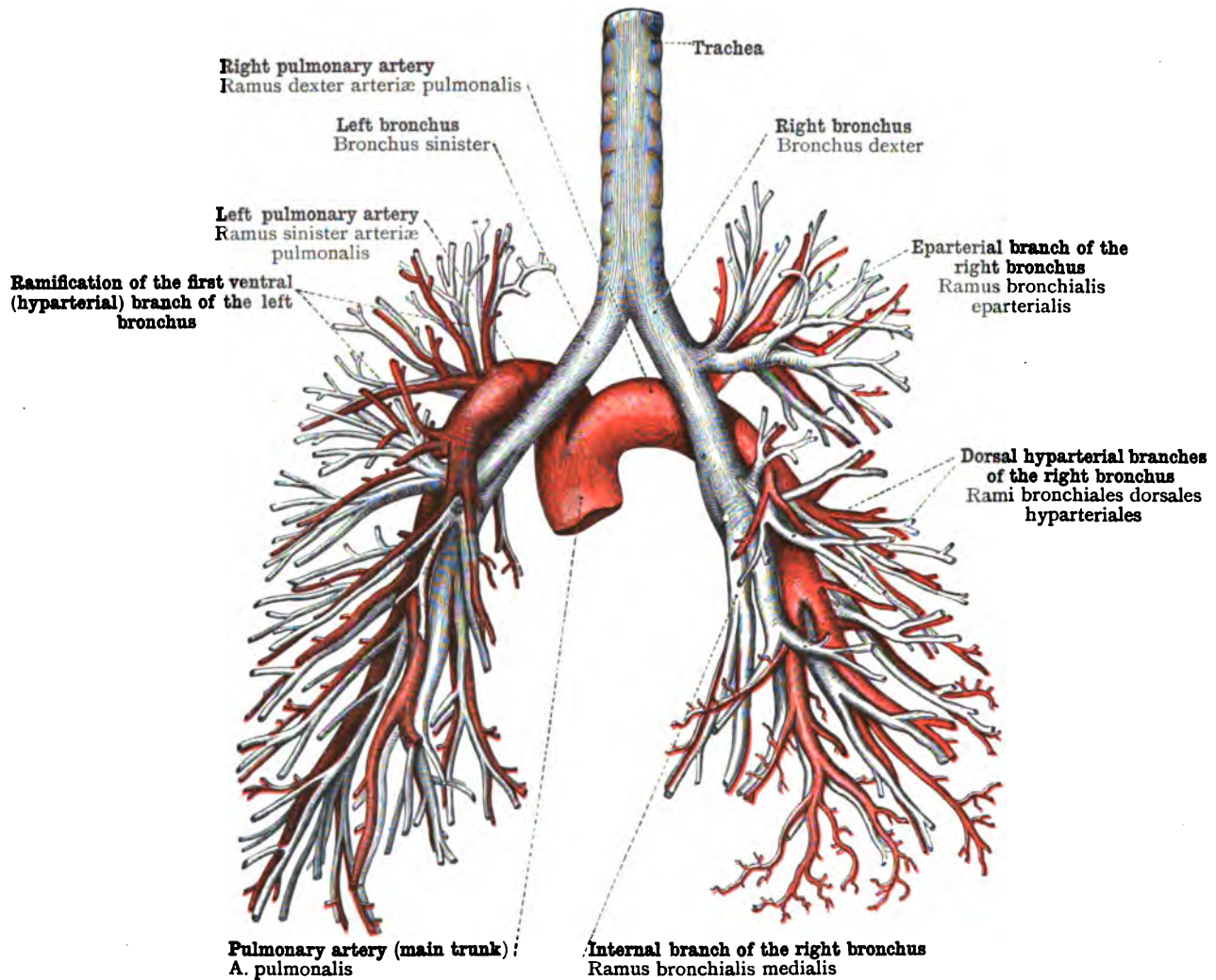


FIG. 977.—THE MAIN TRUNK OF THE PULMONARY ARTERY, ARTERIA PULMONALIS; ITS BIFURCATION INTO THE RIGHT AND THE LEFT PULMONARY ARTERY, RAMUS DEXTER ET RAMUS SINISTER ARTERIÆ PULMONALIS; THE RAMIFICATION OF THE PULMONARY ARTERIES WITHIN THE LUNG, AND THEIR RELATION TO THE BRONCHIAL RAMIFICATION. SEEN FROM BEHIND.

Arteria pulmonalis—The pulmonary artery.

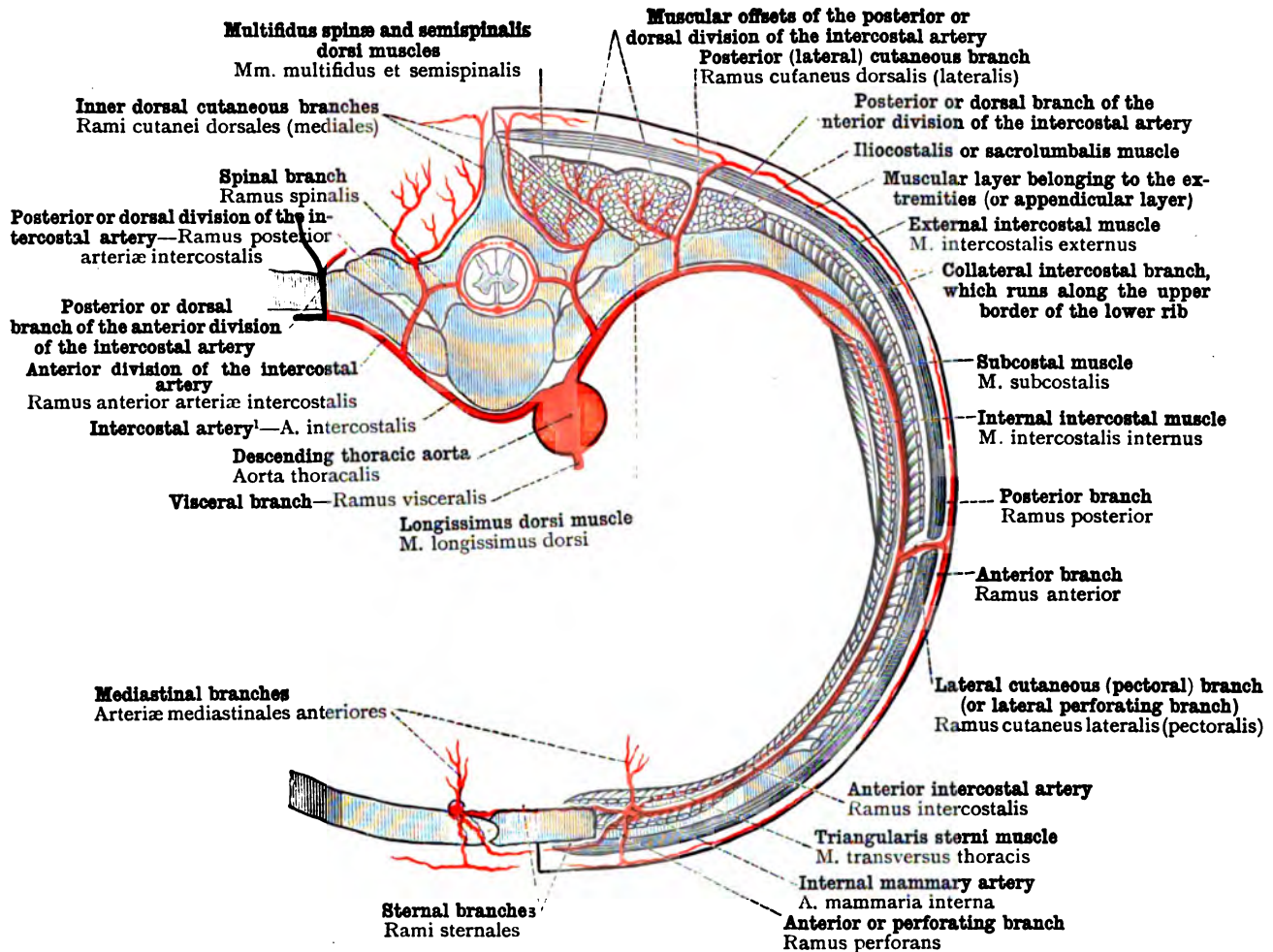
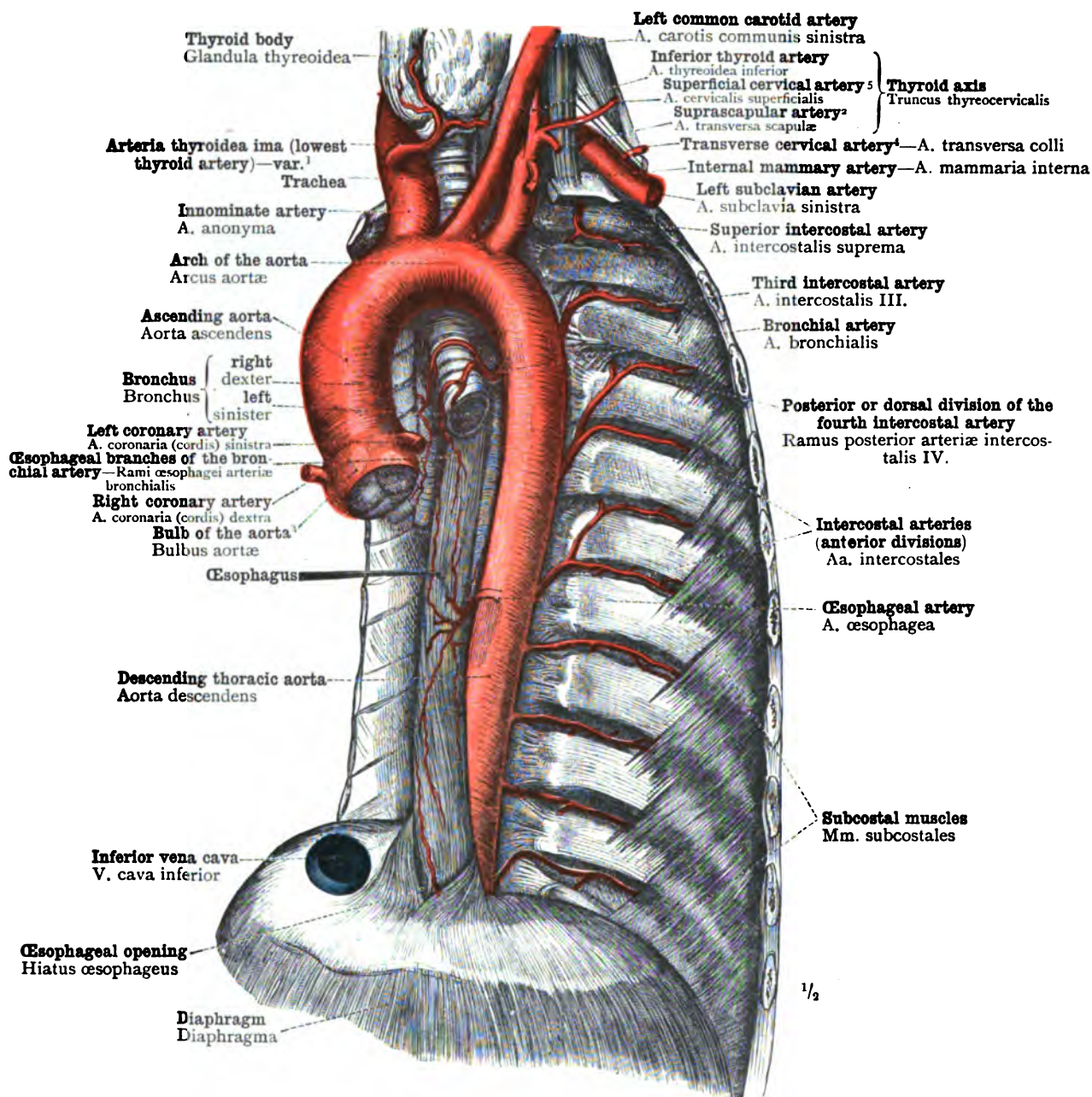


FIG. 978.—DIAGRAMMATIC REPRESENTATION OF THE DISTRIBUTION OF THE ARTERIES SUPPLYING THE BODY-WALL, SHOWN IN A THORACIC SEGMENT.<sup>1</sup>

<sup>1</sup> *Intercostal Arteries.*—Quain's description of the distribution of these arteries differs somewhat from that given in the text. The main trunk of the *intercostal artery* runs along the lower border of the upper rib, and ends by anastomosing with one of the anterior intercostal branches of the internal mammary artery. Its branches are (1) *posterior or dorsal (ramus posterior)*, which gives *spinal, muscular, and cutaneous* offsets (*ramus spinalis, rami musculares, rami cutanei dorsales mediales*), (2) the *collateral intercostal branch*, which runs along the upper border of the lower rib, and ends by anastomosing with the lower of the two anterior intercostal arteries given to each space by the internal mammary artery. The *ramus dorsalis* of the anterior division is not described by Quain; the *ramus cutaneus lateralis (pectoralis)*, which accompanies the lateral cutaneous branch of the intercostal nerve, is named by that author only in the section on the "Morphology of the Arterial System," where it is shown to belong to the series of *lateral perforating arteries*.—Tr.





<sup>1</sup> *Arteria Thyroidea Ima (Lowest Thyroid Artery)*.—This artery is met with on an average in one body in every ten. It may arise from the innominate trunk (most frequently), from the right common carotid, or from the aorta. In exceptional instances it springs from the internal mammary or from the subclavian artery. Its size is a very variable one, being related inversely to that of the other thyroid arteries. Lying in front of the trachea, this vessel, like the inferior thyroid veins, is endangered in the operation of tracheotomy.—Tr.

<sup>2</sup> Known also as the *transverse scapular* or *transverse humeral* artery.

<sup>4</sup> Or *posterior scapular artery* (Macalister). See Appendix, notes 134, 135, 172.

<sup>5</sup> See Appendix, notes 134, 135, 172, 208.

<sup>3</sup> See note <sup>1</sup> to p. 569.

FIG. 97).—AORTA THORACALIS, THE THORACIC AORTA (CONSISTING OF THE ASCENDING AORTA, THE ARCH OF THE AORTA, AND THE DESCENDING THORACIC AORTA), WITH ITS VISCERAL AND PARIETAL BRANCHES SEEN FROM THE LEFT SIDE AND BEFORE. BRONCHIAL ARTERIES, ARTERIÆ BRONCHIALES. OESOPHAGEAL ARTERIES, ARTERIÆ OESOPHAGEÆ. INTERCOSTAL ARTERIES, ARTERIÆ INTERCOSTALES, IN ALL THE LEFT INTERCOSTAL SPACES EXCEPT THE UPPERMOST, ARE EXPOSED AS FAR FORWARDS AS THE INTERNAL INTERCOSTAL AND SUBCOSTAL MUSCLES. THEIR DIVISION INTO ANTERIOR AND POSTERIOR BRANCHES (RAMI ANTERIORES ET POSTERIORES) IS SEEN, AND THE ORIGIN OF THE MUSCULAR BRANCHES (RAMI MUSCULARES) OF THE FORMER.

The specimen shows a frequent variety in the origin of the fourth and fifth and of the sixth and seventh intercostal arteries from common roots. The second intercostal artery consists of the distal portion of the superior intercostal artery (arteria intercostalis suprema), which arises from the costocervical axis (truncus costocervicalis—see Appendix, note 177). From the subclavian artery arises the abnormal lowest thyroid artery of Neubauer, arteria thyroidea ima (see note <sup>1</sup> above).

Aorta thoracalis, the thoracic aorta.—Aa. bronchiales et oesophageæ, the bronchial and oesophageal arteries.—Aa. intercostales, the intercostal arteries.



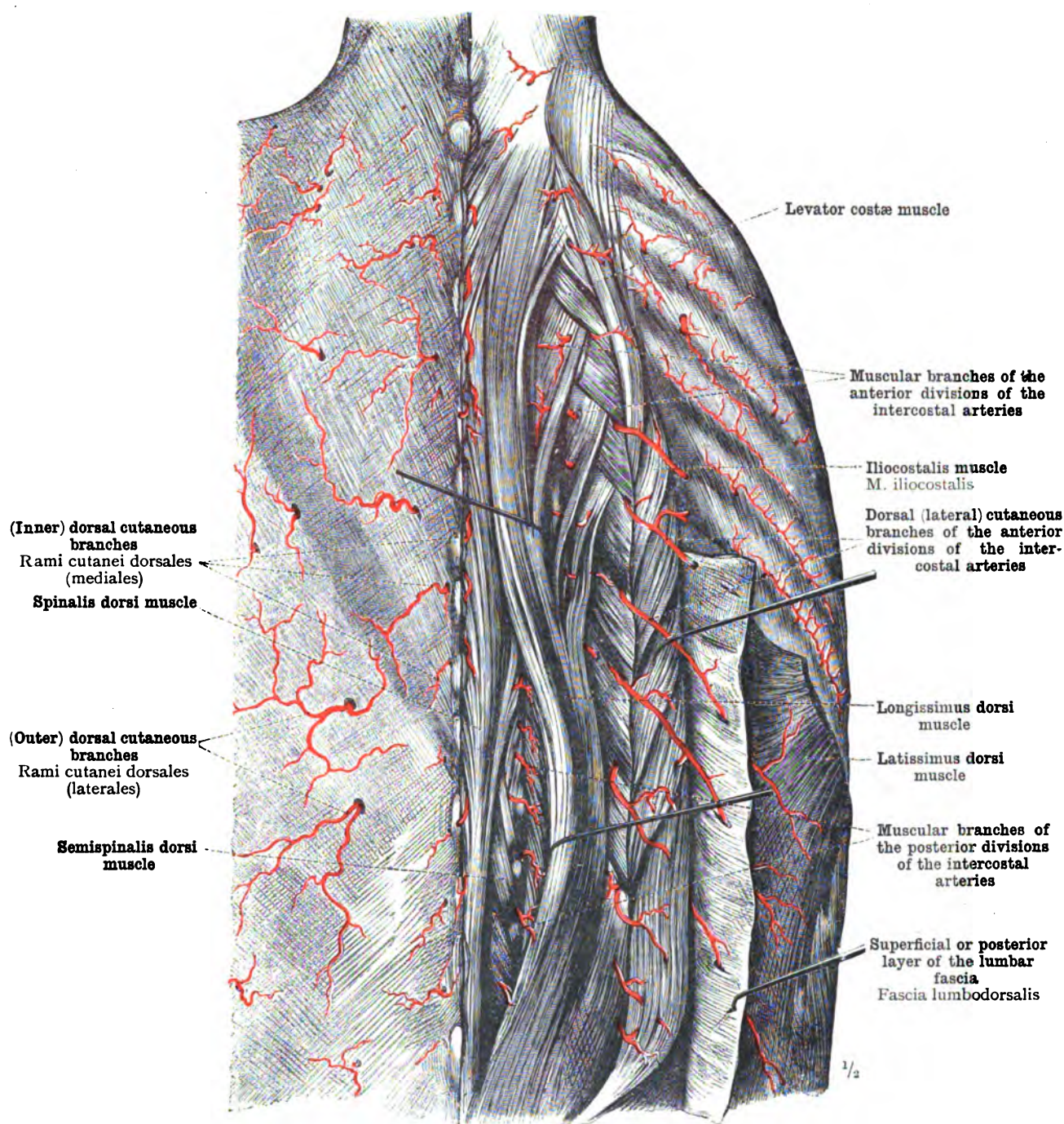


FIG. 980.—RAMIFICATION OF THE POSTERIOR OR DORSAL BRANCHES OF THE INTERCOSTAL ARTERIES IN THE BACK.

On the left side we see the inner and outer cutaneous branches; on the right side, chiefly the muscular branches. On the right side the superficial or posterior layer of the lumbar fascia (by some anatomists termed "the aponeurosis of the latissimus dorsi muscle"—see Part III., Fig. 507, p. 266, Fig. 508, p. 267, and note \* to the latter page) has been detached from the spinous processes and turned outwards; the iliocostalis muscle has been drawn outwards; and the longissimus dorsi muscle has been drawn outwards below, inwards above.

RAMI MUSCULARES ET RAMI CUTANEI DORSALES, MEDIALES ET LATERALES; THE INNER AND OUTER MUSCULAR AND CUTANEOUS POSTERIOR OR DORSAL BRANCHES OF THE INTERCOSTAL ARTERIES.

The outer row of branches is derived from the posterior or dorsal branches of the anterior divisions of the intercostal arteries, which divide between the longissimus dorsi and the iliocostalis muscles into inner and outer twigs.

**Rami Posteriores, Posterior or Dorsal Branches, of the Intercostal Arteries.**



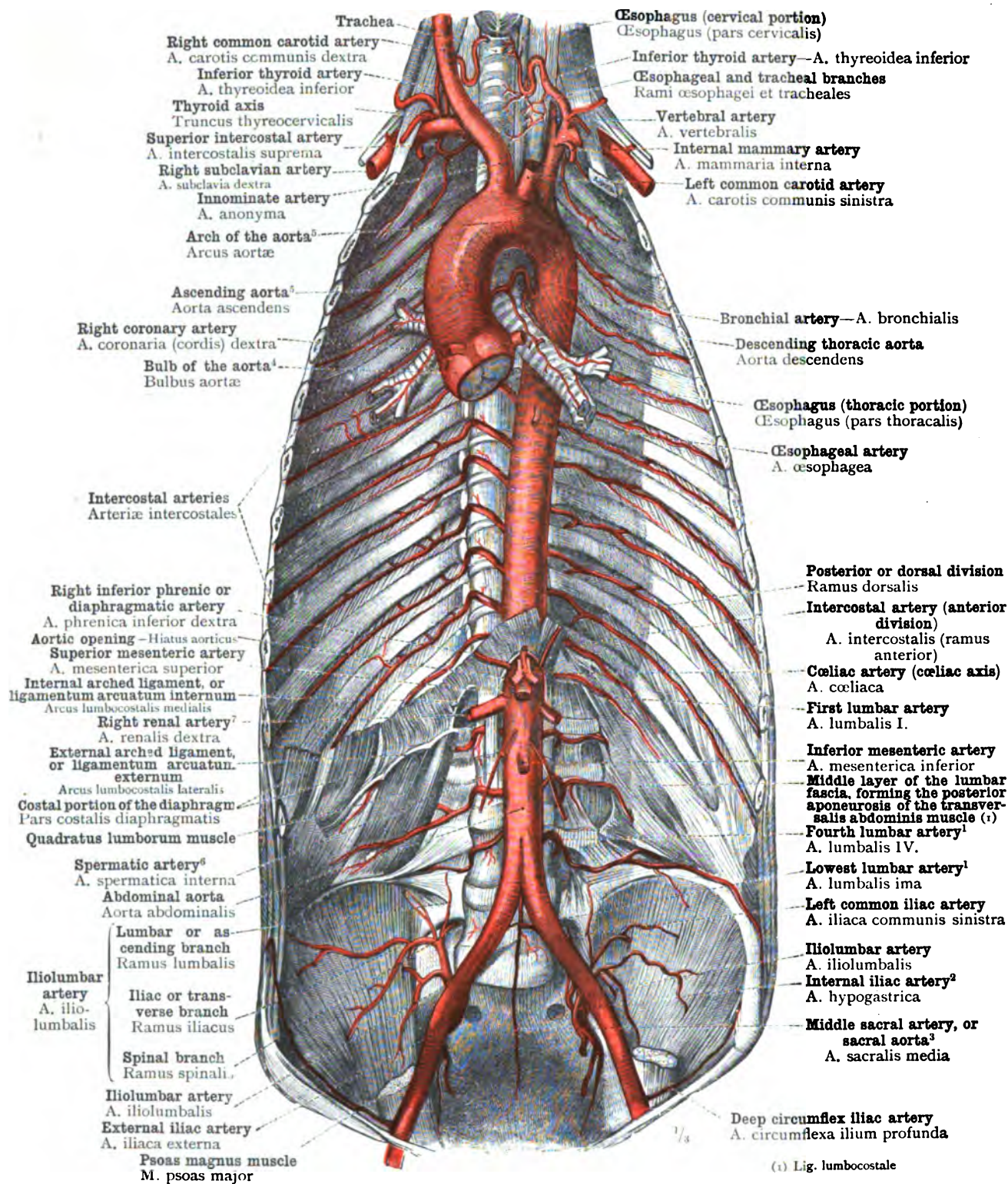
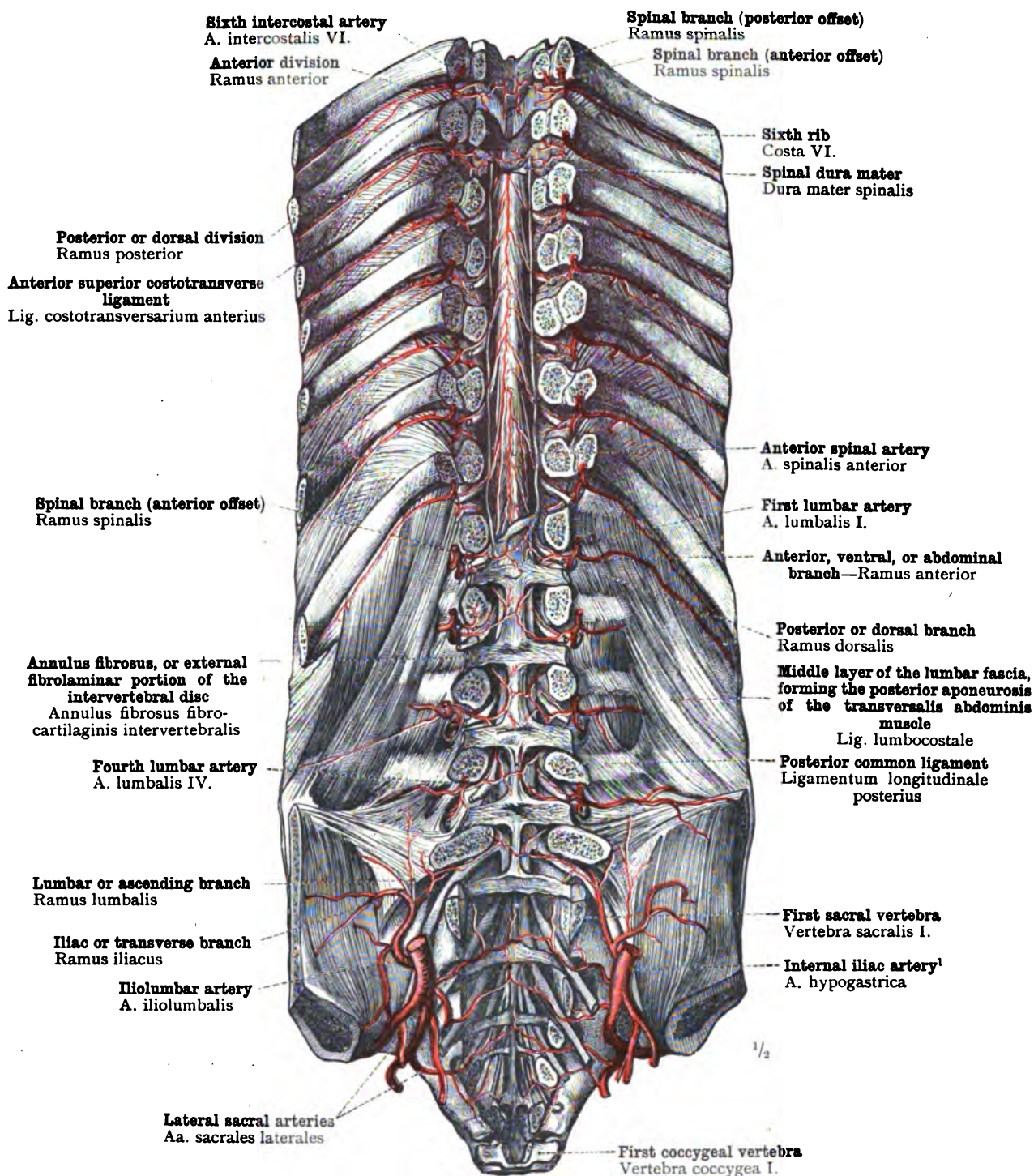
<sup>1</sup> See Appendix, note 126.<sup>5</sup> See Appendix, note 128.<sup>2</sup> See Appendix, note 129.<sup>6</sup> See Appendix, note 129.<sup>3</sup> See Appendix, note 127.<sup>7</sup> See note 3 to p. 595.<sup>4</sup> See note 1 to p. 569.

FIG. 981.—PARIETAL BRANCHES OF THE THORACIC AND ABDOMINAL AORTA: THE INTERCOSTAL ARTERIES, THE LUMBAR ARTERIES, AND THE MIDDLE SACRAL ARTERY, OR SACRAL AORTA.

The visceral branches of the aorta, with the exception of the bronchial artery, have been cut away close to their origin.

**Arteriæ intercostales et lumbales—The intercostal and lumbar arteries.**





<sup>1</sup> See Appendix, note 120.

FIG. 982.—RAMI SPINALES, THE SPINAL BRANCHES, OF THE INTERCOSTAL, LUMBAR, AND LATERAL SACRAL ARTERIES (ARTERIÆ INTERCOSTALES, LUMBALES, ET SACRALES LATERALES), SEEN FROM BEFORE.

The spinal canal and the intervertebral foramina have been opened by the removal of the vertebral bodies or centra. Down to the eighth dorsal vertebra, the spinal cord and the dura mater have been removed; from the eighth dorsal to the first lumbar vertebra, the spinal cord has been laid bare by the removal of the dura mater; below the first lumbar vertebra the posterior common ligament and the hindmost portions of the intervertebral discs have been left intact.

### The Arteries of the Spinal Canal.



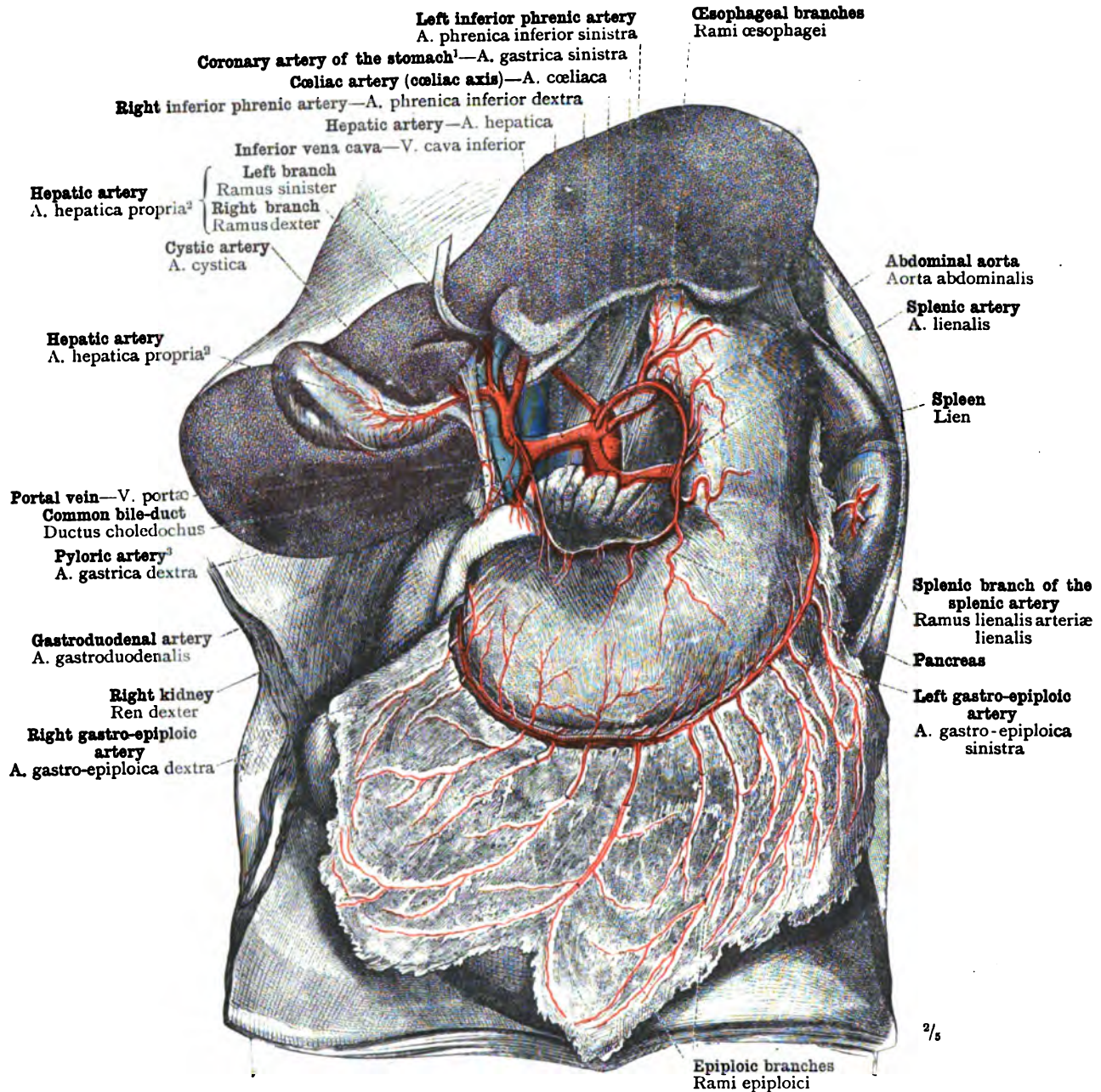
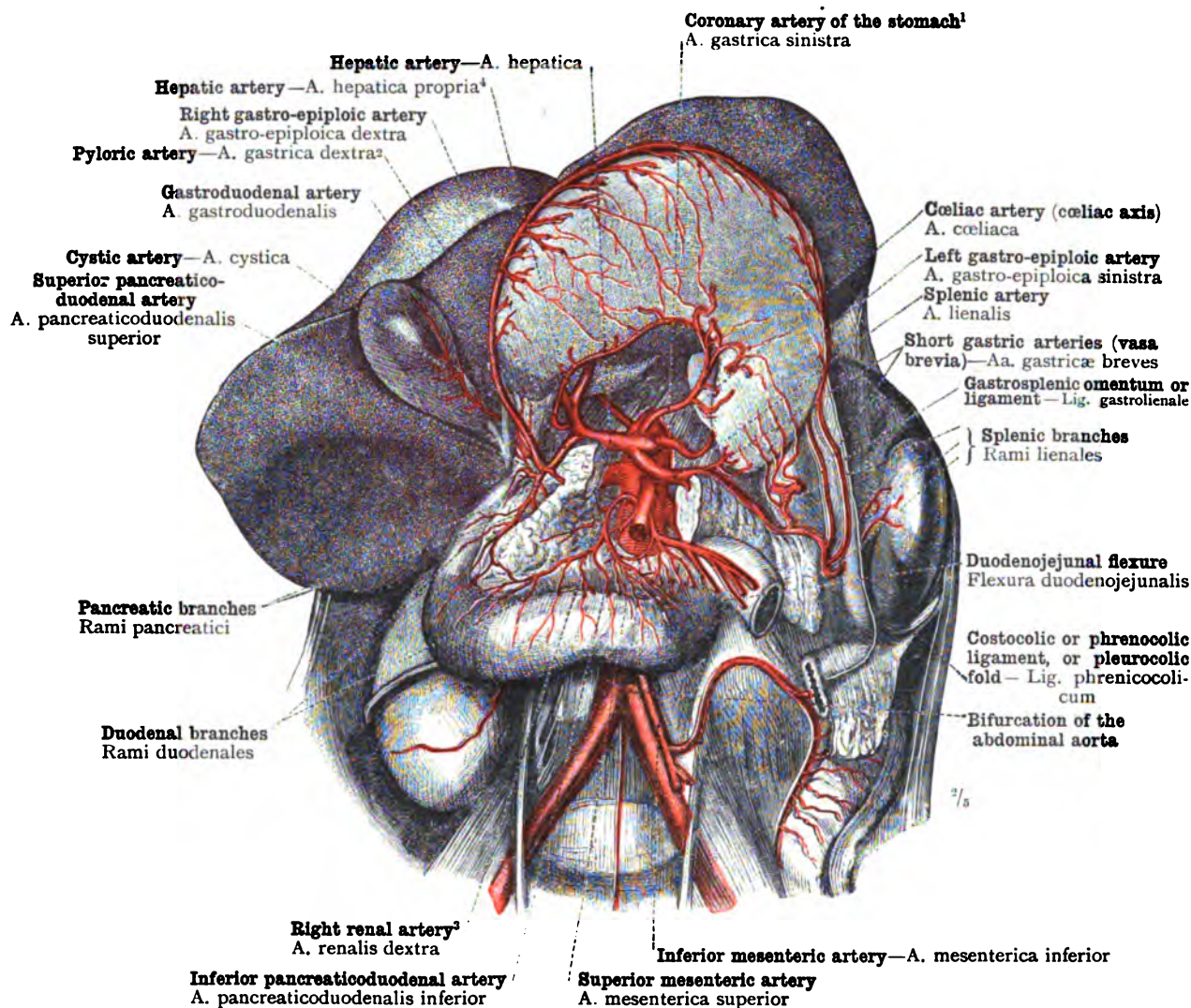
<sup>1</sup> Called by Macalister the *gastric artery*.<sup>2</sup> See Appendix, note 130.<sup>3</sup> See Appendix, note 131.

FIG. 983.—THE DIVISION INTO THREE BRANCHES OF THE CÆLIAC ARTERY OR CÆLIAC AXIS (ARTERIA CÆLIACA, TRIPUS CÆLIACUS HALLERI) DISPLAYED FROM BEFORE BY THE REMOVAL OF THE SMALL OR GASTROHEPATIC OMENTUM. THESE BRANCHES ARE: THE CORONARY ARTERY OF THE STOMACH (ARTERIA GASTRICA SINISTRA—GASTRIC ARTERY, ACCORDING TO MACALISTER); THE SPLENIC ARTERY (ARTERIA SPLENICA); AND THE HEPATIC ARTERY (ARTERIA HEPATICA), WHICH DIVIDES INTO THE GASTRODUODENAL ARTERY AND THE \*ARTERIA HEPATICA PROPRIA, THE LATTER GIVING OFF THE PYLORIC ARTERY (ARTERIA GASTRICA DEXTRA—SUPERIOR PYLORIC ARTERY, ACCORDING TO MACALISTER), AND THEN DIVIDING INTO LEFT AND RIGHT HEPATIC ARTERIES (see Appendix, note 130). THE CYSTIC ARTERY IS DERIVED FROM THE RIGHT HEPATIC ARTERY; THE RIGHT GASTRO-EPIPLOIC ARTERY FROM THE GASTRODUODENAL ARTERY; AND THE LEFT GASTRO-EPIPLOIC ARTERY FROM THE SPLENIC ARTERY. IN THE GREAT OMENTUM, WHICH IS SPREAD OUT FLAT, ARE SEEN THE EPIPLOIC BRANCHES OF THE GASTRO-EPIPLOIC ARTERIES. IN THE \*HEPATODUODENAL LIGAMENT (part of the small or gastrohepatic omentum—see Appendix to Part IV., note 42) WE OBSERVE THE MUTUAL RELATIONS OF THE HEPATIC ARTERY, THE PORTAL VEIN, AND THE COMMON BILE-DUCT. THE LEFT INFERIOR PHRENIC ARTERY IS IN THIS SPECIMEN DERIVED FROM THE CÆLIAC AXIS (A COMMON VARIETY).

### The Asymmetrical Visceral Branches of the Abdominal Aorta.





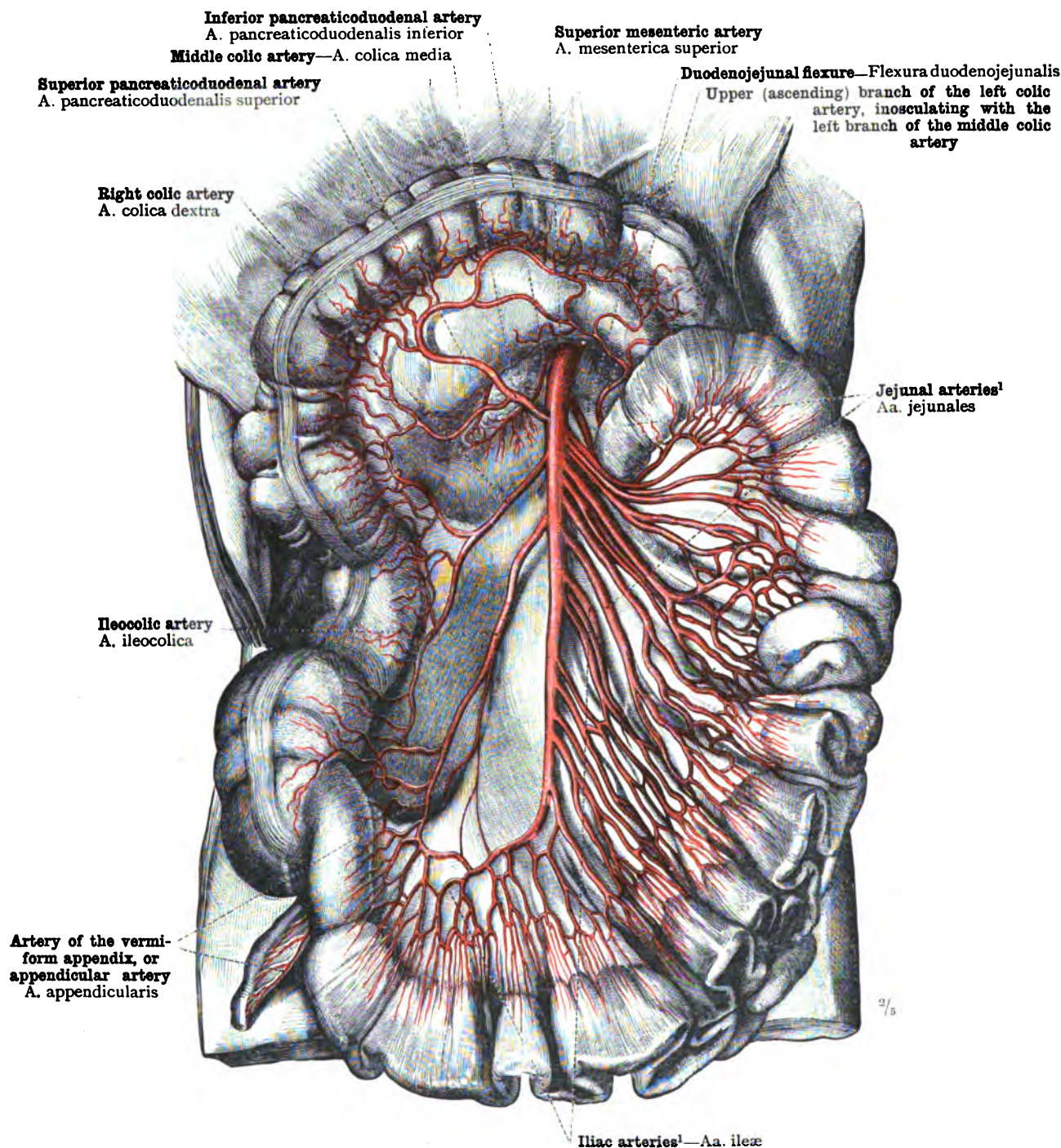
- <sup>1</sup> Called by Macalister the *gastric artery*.  
<sup>2</sup> Called by Macalister the *superior pyloric artery*—see Appendix, note <sup>131</sup>.  
<sup>3</sup> The *renal arteries* are sometimes known as the *emulgent arteries*, but the term is now rarely used. The name is derived from the function of the organs they supply (*emulgeo*, I milk or drain out).—Tr.  
<sup>4</sup> See Appendix, note <sup>130</sup>.

FIG. 984.—THE DISTRIBUTION OF THE BRANCHES OF THE CÆLIAC ARTERY OR CÆLIAC AXIS (ARTERIA CÆLIACA, TRIPUS CÆLIACUS HALLERI), SEEN FROM BEFORE: THE SPLENIC ARTERY, ARTERIA LIENALIS; ITS OFFSETS TO THE PANCREAS AND THE SPLEEN, RAMI PANCREATICI ET LIENALES; THE SHORT GASTRIC ARTERIES (VASA BREVIA), ARTERIÆ GASTRICÆ BREVES; THE LEFT GASTRO-EPIPLOIC ARTERY, ARTERIA GASTRO-EPIPLOICA SINISTRA, AND ITS ANASTOMOSIS WITH THE RIGHT GASTRO-EPIPLOIC ARTERY, ARTERIA GASTRO-EPIPLOICA DEXTRA; THE BIFURCATION OF THE GASTRODUODENAL ARTERY, ARTERIA GASTRODUODENALIS; THE PANCREATIC AND DUODENAL OFFSETS, RAMI PANCREATICI ET DUODENALES, OF THE SUPERIOR AND INFERIOR PANCREATICODUODENAL ARTERIES, ARTERIÆ PANCREATICODUODENALES, SUPERIOR ET INFERIOR.

In the preparation shown in Fig. 983, the liver was drawn upwards as far as possible, and the stomach also turned up. The duodenum and the pancreas were laid bare. By the removal of a portion of the body of the pancreas, the abdominal aorta with the origin of the two renal arteries and the superior mesenteric artery was exposed. The great or gastrocolic omentum was removed, except the gastrosplenic omentum or ligament, which was left intact.

### The Asymmetrical Visceral Branches of the Abdominal Aorta.





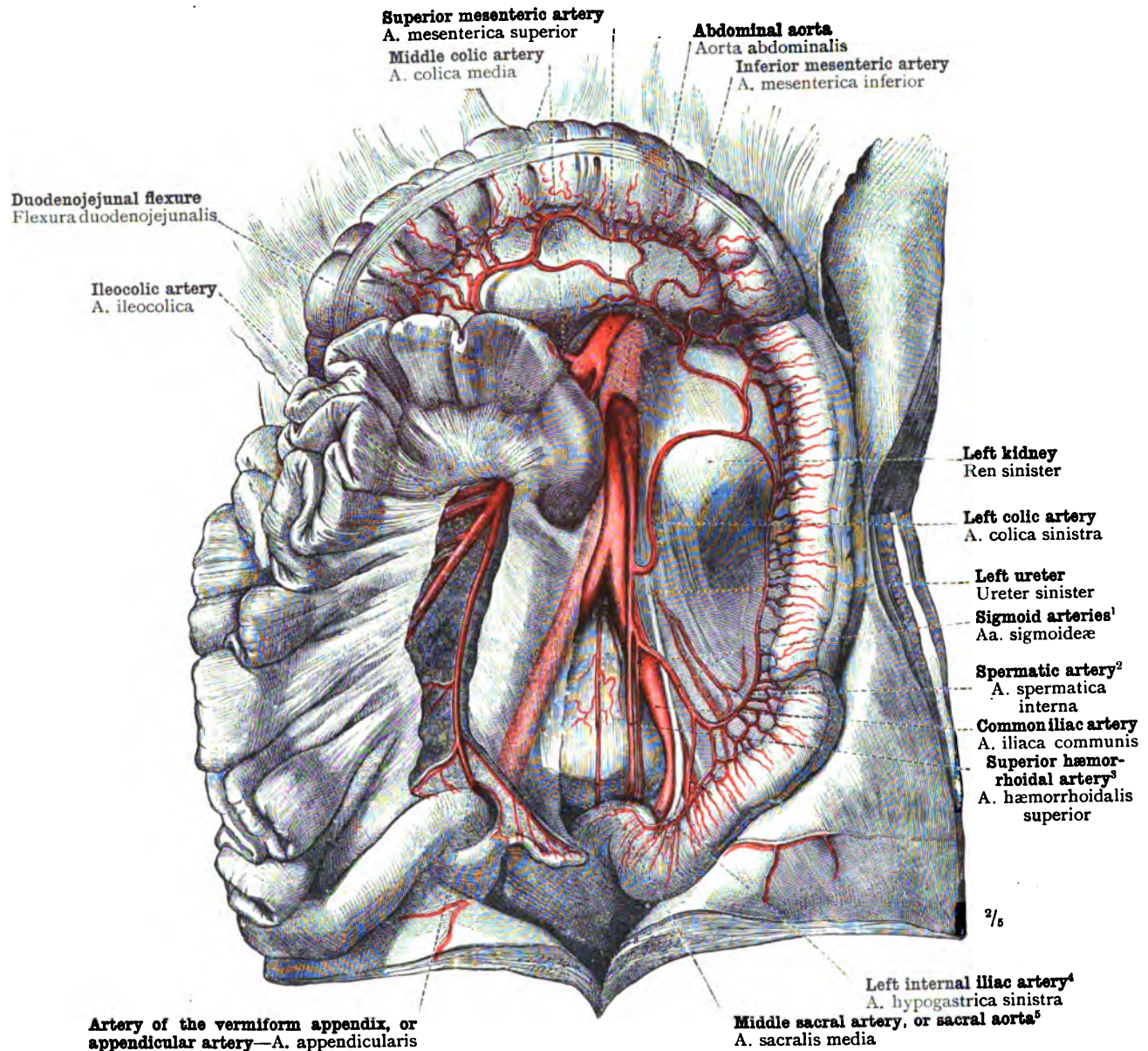
<sup>1</sup> *Jejunal and Iliac Arteries.*—Quain calls these indifferently the *intestinal branches* of the superior mesenteric artery; but Macalister, like Toldt, classifies the upper half as *jejunal*, and the lower half as *iliac arteries*.—Tr.

FIG. 985.—THE DISTRIBUTION OF THE SUPERIOR MESENTERIC ARTERY, ARTERIA MESENTERICA SUPERIOR. THE INTESTINAL ARTERIES, ARTERIÆ INTESTINALES: SUPERIOR PANCREATICODUODENAL ARTERY, ARTERIA PANCREATICODUODENALIS SUPERIOR; JEJUNAL AND ILIAC ARTERIES, ARTERIÆ JEJUNALES ET ILIACÆ; ILEO-COLIC ARTERY, ARTERIA ILEOCOLICA, GIVING OFF THE ARTERY OF THE VERMIFORM APPENDIX OR APPENDICULAR ARTERY, ARTERIA APPENDICULARIS; THE RIGHT COLIC ARTERY, ARTERIA COLICA DEXTRA; THE MIDDLE COLIC ARTERY, ARTERIA COLICA MEDIA.

The jejunum and ileum with their mesentery have been drawn to the left side; the colon and the transverse mesocolon have been drawn upwards.

### The Asymmetrical Visceral Branches of the Abdominal Aorta.





<sup>1</sup> *Sigmoid Artery*.—This branch of the inferior mesenteric artery is described as normally single. Two *sigmoid arteries*, as in the specimen figured above, are, however, of quite frequent occurrence; and in some instances as many as three may be met with.—Tr.

<sup>2</sup> See Appendix, note 129.

<sup>4</sup> See Appendix, note 120.

<sup>3</sup> Called by Macalister the *superior rectal artery*.

<sup>5</sup> See Appendix, note 127.

**FIG. 986.**—THE DISTRIBUTION OF THE INFERIOR MESENTERIC ARTERY, ARTERIA MESENTERICA INFERIOR: THE LEFT COLIC ARTERY, ARTERIA COLICA SINISTRA, AND ITS INOSCULATION WITH THE MIDDLE COLIC ARTERY, ARTERIA COLICA MEDIA; THE SIGMOID ARTERIES, ARTERIÆ SIGMOIDÆ, AND THE SUPERIOR HÆMORRHOIDAL (OR SUPERIOR RECTAL) ARTERY, ARTERIA HÆMORRHOIDALIS SUPERIOR. THE ILEOCOLIC ARTERY, ARTERIA ILEOCOLICA, DERIVED FROM THE SUPERIOR MESENTERIC ARTERY, ARTERIA MESENTERICA SUPERIOR, AND SUPPLYING THE ARTERY OF THE VERMIFORM APPENDIX OR APPENDICULAR ARTERY, ARTERIA APPENDICULARIS.

In the preparation shown in Fig. 985, the colon and the transverse mesocolon were drawn upwards; the jejunum and ileum with their mesentery to the left. By cutting through the left peritoneal layer of the mesentery of the small intestine, the ileocolic artery was exposed, and its offset to the vermiform appendix (appendicular artery) was traced to its destination.

### The Asymmetrical Visceral Branches of the Abdominal Aorta.



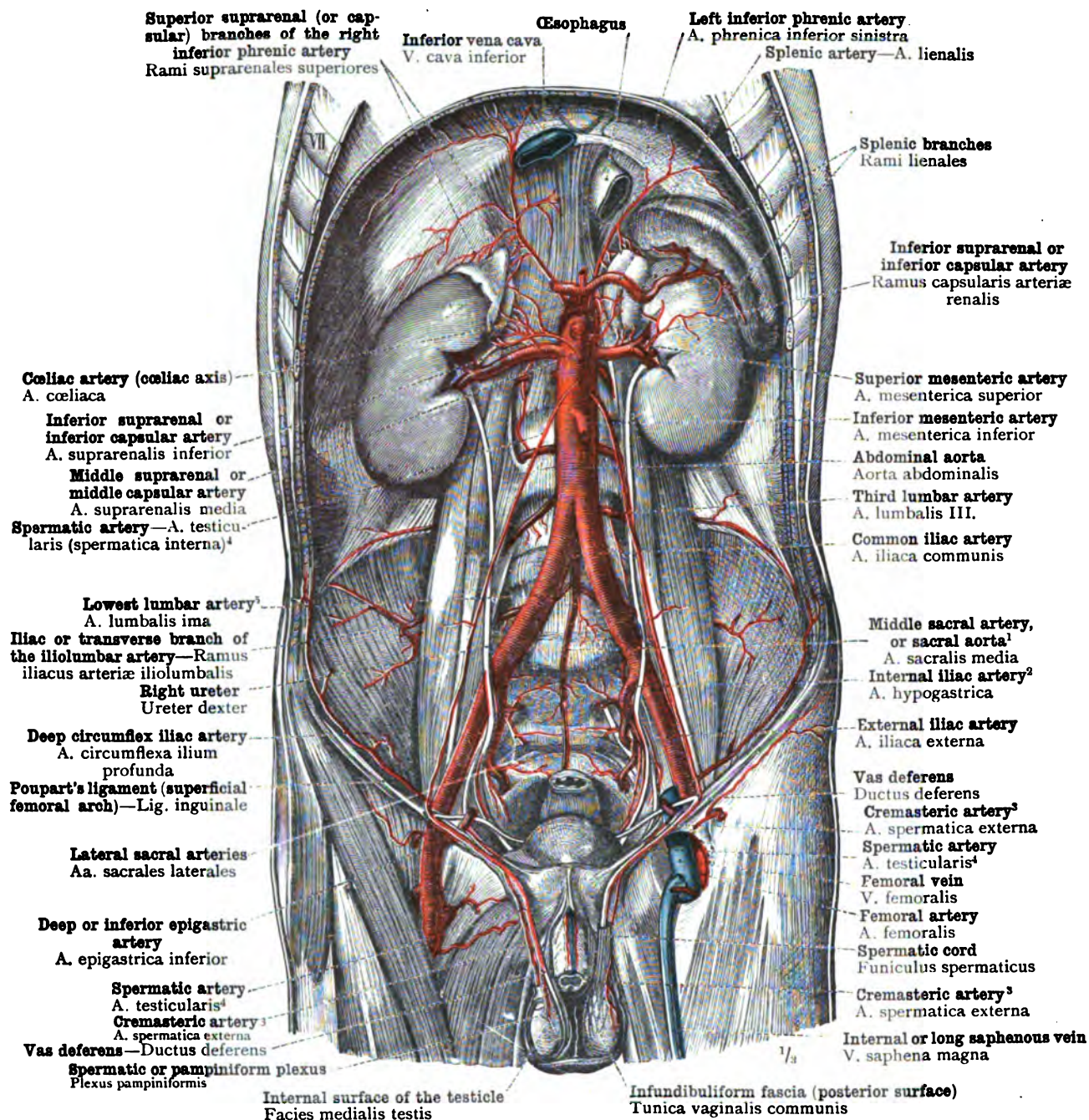
<sup>1</sup> See Appendix, note 127.<sup>2</sup> See Appendix, note 126.<sup>3</sup> See Appendix, note 129.<sup>4</sup> *Arteria Testicularis*.—This name is used by the author as a synonym for *arteria spermatica interna*, the spermatic artery of English anatomists. (See Appendix, note 123.)—T.R.<sup>5</sup> See Appendix, note 126.

FIG. 987.—THE PARIETAL BRANCHES AND THE SYMMETRICAL (PAIRED) VISCERAL BRANCHES OF THE ABDOMINAL AORTA: THE INFERIOR PHRENIC OR INFERIOR DIAPHRAGMATIC ARTERIES AND THE LUMBAR ARTERIES; THE MIDDLE SACRAL ARTERY, OR SACRAL AORTA, AND THE LATERAL SACRAL ARTERIES; THE SPLENIC ARTERIES, THE RENAL OR EMULGENT ARTERIES (see note <sup>3</sup> to p. 595), AND THE SUPRARENAL OR CAPSULAR ARTERIES; THE SPERMATIC ARTERIES (ARTERIÆ TESTICULARES ET ARTERIÆ SPERMATICÆ INTERNÆ), AND THE CREMASTERIC ARTERIES (ARTERIÆ SPERMATICÆ EXTERNÆ) see Appendix, note 129.

The abdominal viscera were removed, with the exception of the spleen, the kidneys, and the suprarenal capsules (adrenals). After removing the anterior half of the scrotum, the internal surface of the right testicle was laid bare by the removal of its coverings, in order to display the entrance of the spermatic artery into the gland; the left testicle was rotated inwards, in order to show the terminal ramification of the cremasteric artery on the infundibuliform fascia, and between the fasciculi of the cremaster muscle.

### The Parietal Branches and the Symmetrical (Paired) Visceral Branches of the Abdominal Aorta.



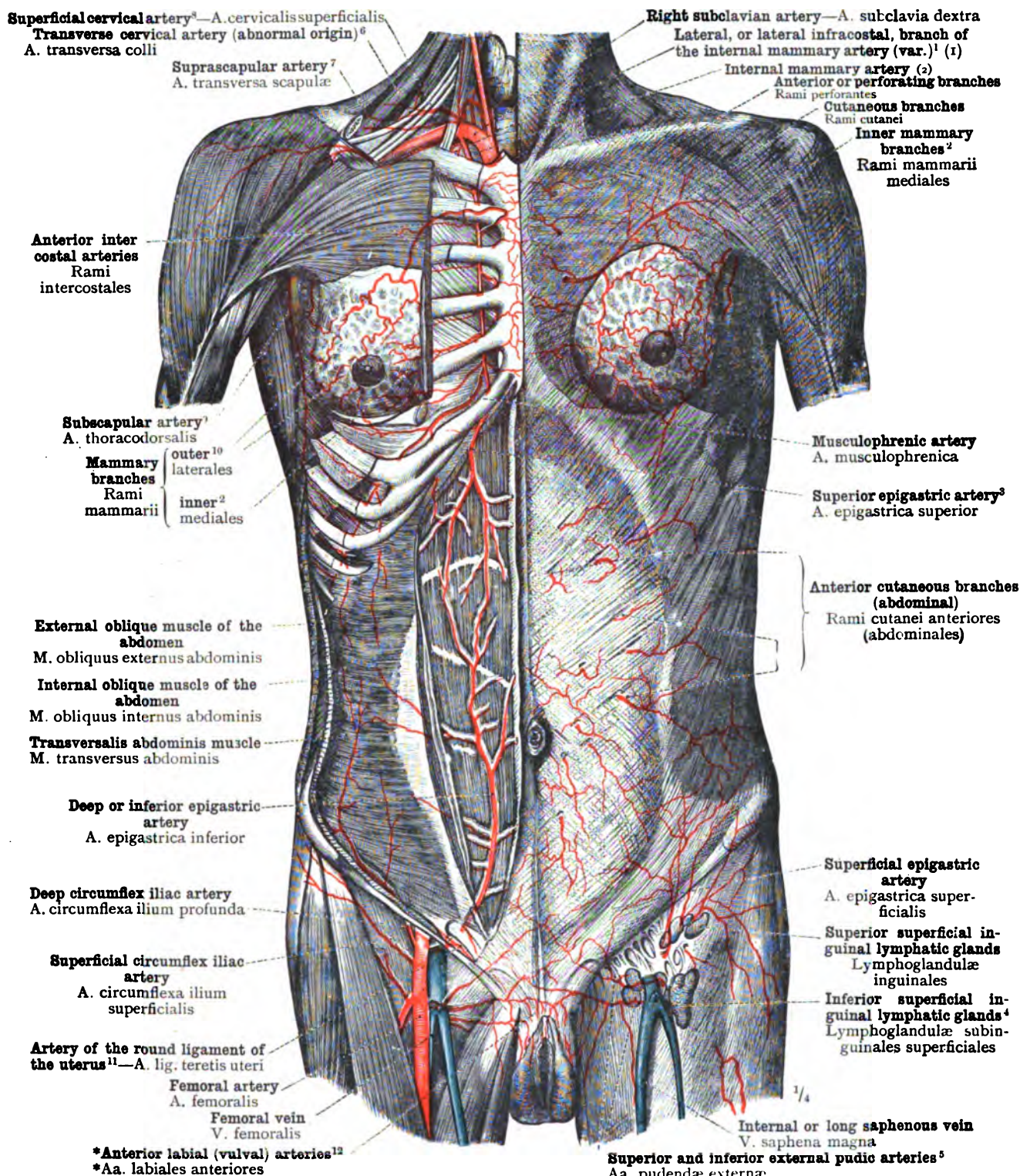
<sup>1</sup> See Appendix, note 132.<sup>2</sup> See Appendix, note 133.<sup>3</sup> Also called the abdominal branch of the internal mammary artery.<sup>4</sup> Often called the femoral lymphatic glands.<sup>5</sup> The upper of these is named by Macalister the superior or superficial pudic; the lower, the inferior pudic artery.—Tr.<sup>6</sup> See Appendix, note 134.<sup>7</sup> Called also the transverse scapular or transverse humeral artery.<sup>8</sup> See Appendix, note 135.<sup>9</sup> See Appendix, note 136.<sup>10</sup> See Appendix, note 137.<sup>11</sup> This branch of the inferior or deep epigastric artery is the homologue in the female of the cremasteric artery of the male.—Tr.<sup>12</sup> See Appendix, note 138.

FIG. 988.—ON THE LEFT SIDE OF THE BODY THE SUPERFICIAL ARTERIES ARE SHOWN; ON THE RIGHT SIDE IN THE INTERCOSTAL SPACES THE INTERNAL MAMMARY ARTERY AND ITS MUSCULOPHRENIC BRANCH (ARTERIE MAMMARIA INTERNA ET MUSCULOPHRENICA) ARE EXPOSED, ALSO, BY PARTIAL REMOVAL OF THE RECTUS ABDOMINIS MUSCLE, THE SUPERIOR EPIGASTRIC ARTERY AND THE INFERIOR OR DEEP EPIGASTRIC ARTERY (ARTERIE EPIGASTRICÆ, SUPERIOR ET INFERIOR).

### The Arteries of the Anterior Wall of the Trunk.



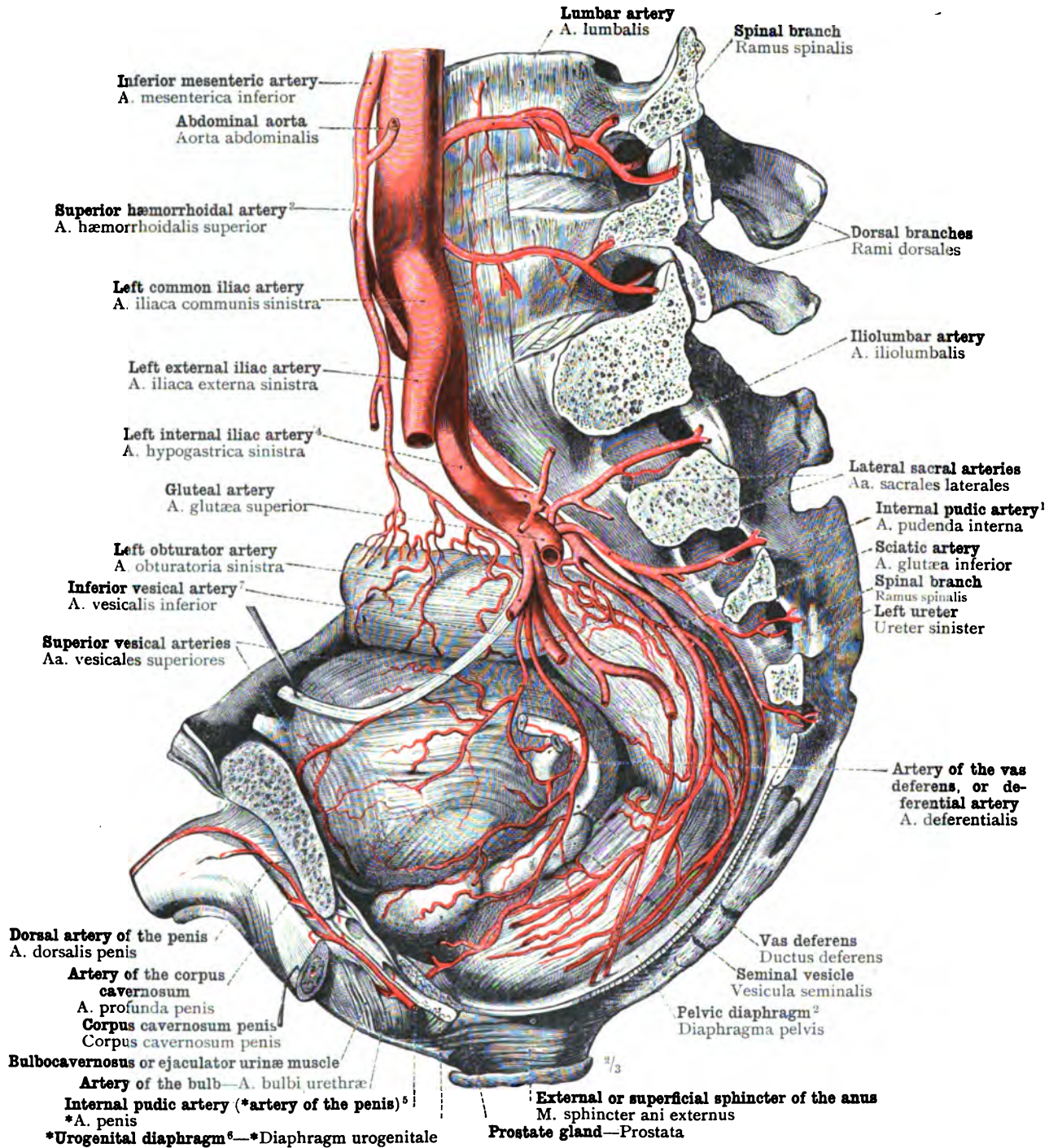
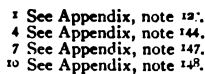
<sup>1</sup> See Appendix, note <sup>139</sup>.<sup>4</sup> See Appendix, note <sup>120</sup>.<sup>2</sup> See Appendix, note <sup>140</sup>.<sup>5</sup> See Appendix, note <sup>141</sup>.<sup>3</sup> Called by Macalister the *superior rectal artery*.<sup>6</sup> See Appendix, note <sup>142</sup>.<sup>7</sup> See Appendix, note <sup>143</sup>.

FIG. 989.—THE VISCERAL BRANCHES, RAMI VISCERALES, OF THE INTERNAL ILIAC ARTERY, ARTERIA HYPOGASTRICA (see Appendix, note <sup>120</sup>), AS SEEN ON THE LEFT SIDE OF THE MALE PELVIS.

The left innominate bone was sawn through close to the pubic symphysis, and was removed together with the left part of the sacrum; a small part of the left side of the pelvic diaphragm (see Appendix, note <sup>140</sup>) was preserved, and was drawn down a little towards the perineum. Further, by the removal of the transverse processes of the fourth and fifth lumbar vertebrae, the dorsal branches of the two lowest lumbar arteries and the lateral sacral arteries were displayed, and their spinal branches (rami spinales) were traced to their entrance into the spinal canal.

### The Arteries of the Male Pelvic Viscera.





In the preparation shown in Fig. 989, the pelvic viscera and the remains of the left half of the pelvis were removed; the levator ani muscle was turned upwards, and beneath this muscle the outer layer of the obturator fascia was removed to display the internal pudic artery in Alcock's canal (see *Appendix, note 145*). The bulb of the urethra and the left crus of the penis were removed, to show the entrance of the artery of the corpus cavernosum (arteria profunda penis) into the structure which it supplies, and the course of the dorsal artery of the penis (arteria dorsalis penis) on to the dorsum of the penis.



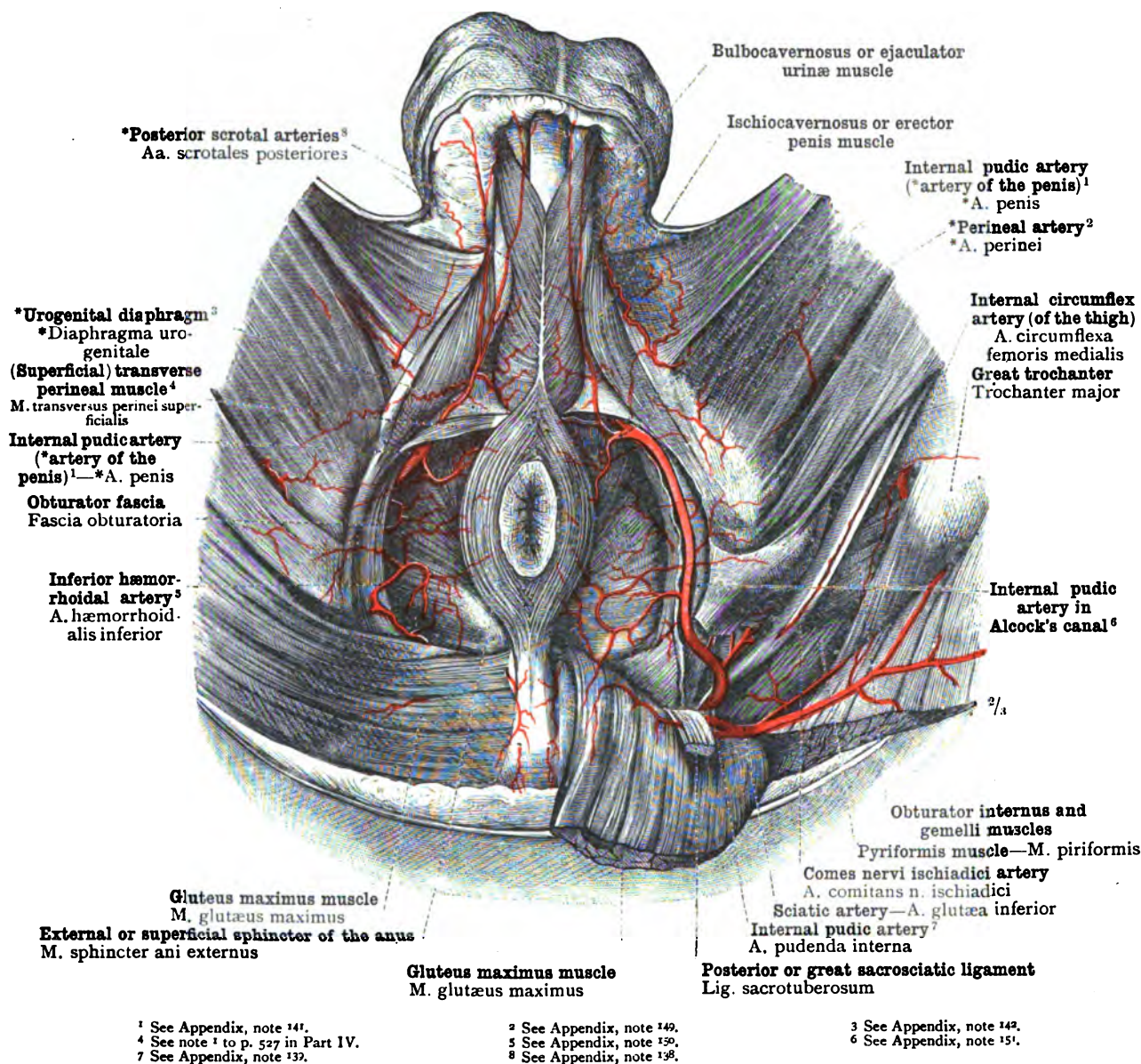


FIG. 991.—THE COURSE AND DISTRIBUTION OF THE INTERNAL PUDIC ARTERY (ARTERIA PUDENDA INTERNA) IN THE MALE PERINEAL REGION: THE INFERIOR OR EXTERNAL HÆMORRHOIDAL ARTERY (ANAL ARTERY, ACCORDING TO MACALISTER), ARTERIA HÆMORRHOIDALIS INFERIOR, AND THE \*PERINEAL ARTERY (*i.e.*, TRANSVERSE PERINEAL AND SUPERFICIAL OR LONG PERINEAL ARTERIES—see Appendix, notes 147 and 149), ARTERIA PERINEI, WITH THE TERMINATION OF THE SUPERFICIAL OR LONG PERINEAL ARTERY BY ITS DIVISION INTO THE TWO POSTERIOR SCROTAL ARTERIES, ARTERIÆ SCROTALES POSTERIORES (see Appendix, note 138).

On the left side of the body, the course of the internal pudic artery (arteria pudenda interna) is shown from its emergence from the pelvis through the great sacrospinous foramen until it penetrates the base of the triangular ligament of the urethra (in the author's terminology, up to its entrance into the \*urogenital diaphragm—see Appendix, note 143); the gluteus maximus muscle has been partially divided by an incision passing upwards from its lower border and has been turned upwards, the great sacrospinous ligament has been divided, Alcock's canal has been opened (see Appendix, note 151), and the (superficial) transverse muscle of the perineum has been entirely removed.



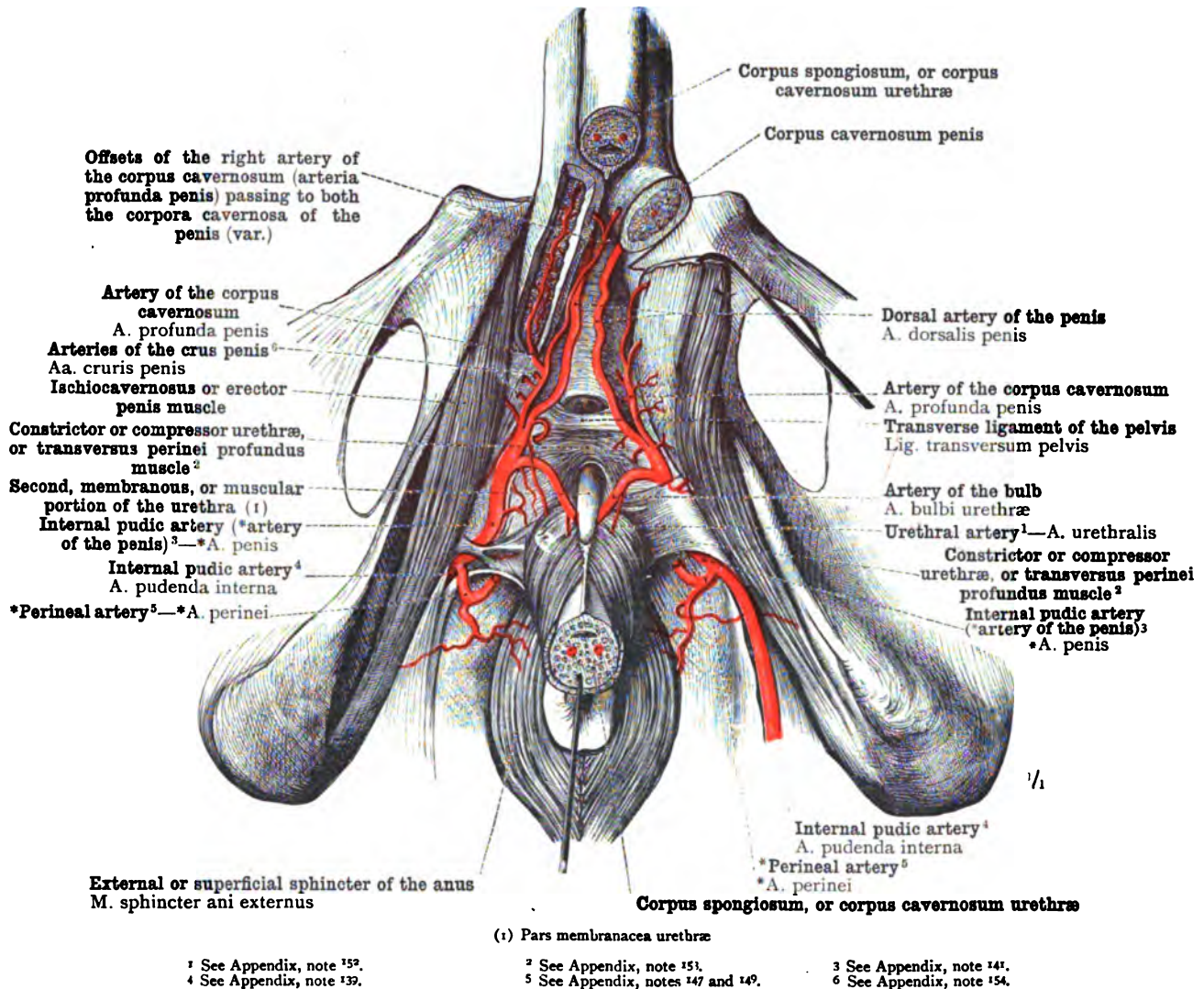


FIG. 992.—THE TERMINAL BIFURCATION OF THE INTERNAL PUDIC ARTERY (\*ARTERY OF THE PENIS, ACCORDING TO TOLDT—see Appendix, note <sup>141</sup>) INTO THE ARTERY OF THE CORPUS CAVERNOSUM (ARTERIA PROFUNDA PENIS) AND THE DORSAL ARTERY OF THE PENIS (ARTERIA DORSALIS PENIS). PRIOR TO THE BIFURCATION, THE FOLLOWING DEEP BRANCHES ARE SUPPLIED: ARTERIA BULBI URETHRÆ, THE ARTERY OF THE BULB; ARTERIA URETHRALIS, THE URETHRAL ARTERY; ARTERIÆ CRURIS PENIS, THE ARTERIES OF THE CRUS PENIS.

On the left side of the body, the superficial layer of the obturator fascia where it covers the internal pudic artery in the ischio-rectal fossa has been removed throughout the whole length of Alcock's canal (see Appendix, note <sup>145</sup>), so that the artery is exposed up to its disappearance between the layers of the constrictor or compressor urethræ or transversus perinei profundus muscle; on the right side of the body, by the removal of the superficial fibres of that muscle, the artery is exposed in the anterior half of the perineum (called by the author in this part of its course the \*artery of the penis, \*arteria penis—see Appendix, note <sup>141</sup>). The corpus spongiosum, or corpus cavernosum urethræ, has been divided transversely in front of the pubic symphysis, the bulb of the urethra has been separated from the \*urogenital diaphragm (see Appendix, note <sup>142</sup>) and turned backwards, in order to show the artery of the bulb entering the dorsal (deep) surface of the bulb. The left crus of the penis has been divided transversely and drawn a little outwards, to display more fully the entrance of the branches of the artery of the corpus cavernosum. On the right side the corresponding artery has been traced for some distance within the substance of the corpus cavernosum. Before entering the corpus cavernosum this (right) artery gives an offset which bifurcates in the angle between the two corpora cavernosa, the two branches entering the right and the left corpus cavernosum, respectively.

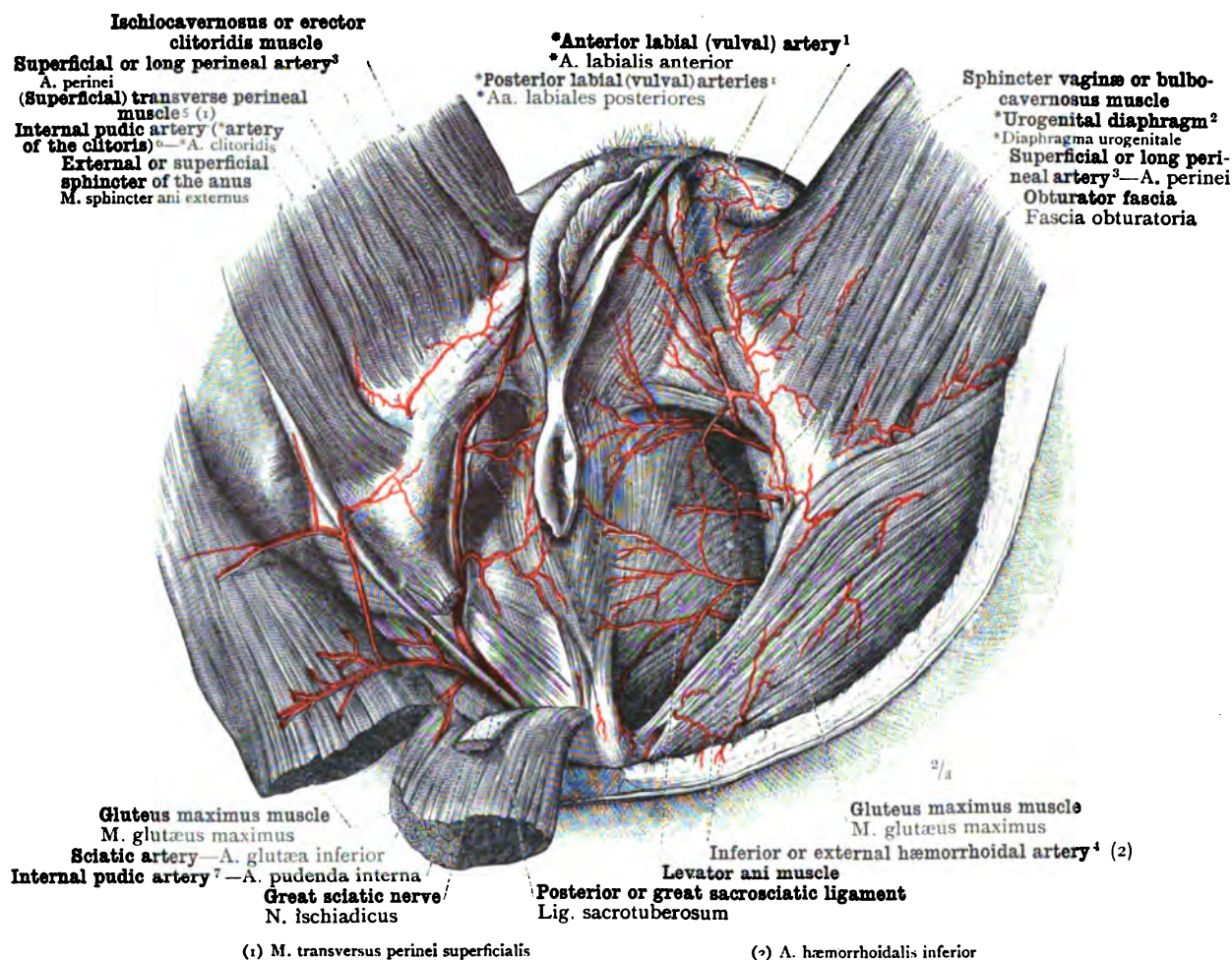
<sup>1</sup> See Appendix, note <sup>138</sup>.<sup>4</sup> Called by Macalister the *anal artery*.<sup>7</sup> See Appendix, note <sup>139</sup>.<sup>2</sup> See Appendix, note <sup>142</sup>.<sup>5</sup> See note <sup>1</sup> to p. 527 in Part IV.<sup>3</sup> See Appendix, note <sup>155</sup>.<sup>6</sup> See Appendix, note <sup>156</sup>.

FIG. 993.—THE SUPERFICIAL BRANCHES OF THE INTERNAL PUDIC ARTERY, ARTERIA PUDENDA INTERNA, IN THE FEMALE PERINEAL REGION: THE INFERIOR OR EXTERNAL HÆMORRHOIDAL ARTERY (ANAL ARTERY, ACCORDING TO MACALISTER), ARTERIA HÆMORRHODALIS INFERIOR, AND THE \*PERINEAL ARTERY (*i.e.*, TRANSVERSE PERINEAL ARTERY AND SUPERFICIAL OR LONG PERINEAL ARTERY—see Appendix, notes <sup>147</sup>, <sup>149</sup>, and <sup>155</sup>), ARTERIA PERINEI, WITH THE TERMINATION OF THE SUPERFICIAL OR LONG PERINEAL ARTERY BY ITS DIVISION INTO THE POSTERIOR LABIAL ARTERIES, ARTERIÆ LABIALES POSTERIORES (see Appendix, note <sup>138</sup>).

On the right side of the body the gluteus maximus muscle was partially divided by an incision passing upwards from its lower border, and was turned upwards; the posterior or great sacrosclatic ligament, ligamentum sacrotuberosum, was cut completely across, and turned upwards with the gluteus maximus muscle. By the removal of the superficial layer of the obturator fascia where it covers the internal pudic artery in Alcock's canal (see Appendix, note <sup>145</sup>), that canal was opened throughout, and the artery was exposed from its point of emergence from the pelvis to the point at which it perforates the base of the triangular ligament (or, in the author's terminology, to the point at which it enters the \*urogenital diaphragm—see Appendix, note <sup>142</sup>).

### The Arteries of the Female Perineal Region.



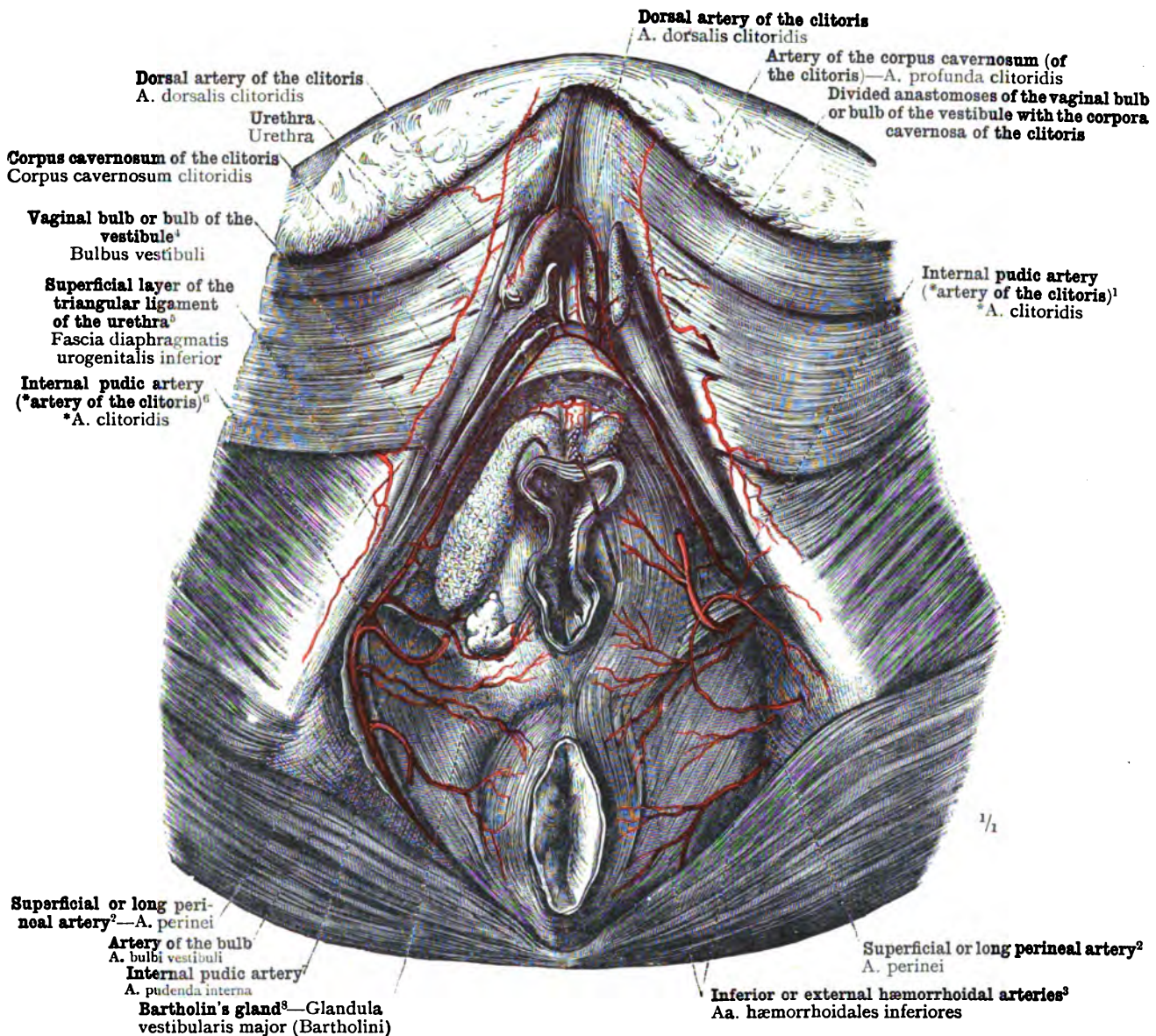


FIG. 994.—THE DEEP BRANCHES OF THE INTERNAL PUDIC ARTERY, ARTERIA PUDENDA EXTERNA IN THE UROGENITAL REGION,<sup>9</sup> REGIO UROGENITALIS, OF THE FEMALE PERINEAL REGION. THE BRANCHES OF THE \*ARTERY OF THE CLITORIS, ARTERIA CLITORIDIS (see Appendix, note <sup>166</sup>): THE ARTERY OF THE BULB, ARTERIA BULBI VESTIBULÆ (VAGINÆ); THE ARTERY OF THE CORPUS CAVERNOSUM (OF THE CLITORIS), ARTERIA PROFUNDA CLITORIDIS; AND THE DORSAL ARTERY OF THE CLITORIS, ARTERIA DORSALIS CLITORIDIS. THE DORSAL ARTERIES OF THE CLITORIS, ARTERIÆ DORSALES\*CLITORIDIS, ARE CONNECTED WITH ONE ANOTHER BY AN ANASTOMOTIC ARCH SITUATE ON THE SUPERFICIAL SURFACE OF THE INFERIOR PUBIC OR SUBPUBIC LIGAMENT (LIGAMENTUM ARCUATUM PUBIS).

In the preparation shown in Fig. 993, the labia majora and the labia minora or nymphæ were removed by a frontal section; on the right side of the body, the sphincter vaginæ or bulbocavernosus muscle and the (superficial) transverse muscle of the perineum (see note <sup>1</sup> to p. 527 in Part IV.) were removed, the anastomoses between the vaginal bulb or bulb of the vestibule and the clitoris were divided, and the passage of the urethra through the \*urogenital diaphragm (see Appendix, note <sup>142</sup>) was displayed by drawing the vagina backwards. The right corpus cavernosum of the clitoris was divided by a longitudinal section commencing at the point of entry of the artery of that body (arteria profunda clitoridis), and this artery was traced for some distance within its substance. The left corpus cavernosum was divided transversely at the point of entry of its artery (arteria profunda clitoridis), and by separating the segments of the crus the course of the dorsal artery of the clitoris, arteria dorsalis clitoridis, to its destination was exposed.

<sup>1</sup> See Appendix, note <sup>156</sup>.

<sup>2</sup> See Appendix, note <sup>157</sup>.

<sup>3</sup> See Appendix, note <sup>158</sup>.

<sup>4</sup> See Appendix, note <sup>159</sup>.

<sup>5</sup> See Appendix to Part IV., note <sup>99</sup>.

<sup>6</sup> See Appendix, note <sup>156</sup>.

<sup>7</sup> See Appendix, note <sup>139</sup>.

<sup>8</sup> Known also as *Duverney's gland*, or the *suburethral gland*. (See Appendix to Part IV., note <sup>66</sup>).—Tr.

<sup>9</sup> Generally known in England as the *anterior half of the perineal space*.—Tr.

### The Arteries of the Female Perineal Region.



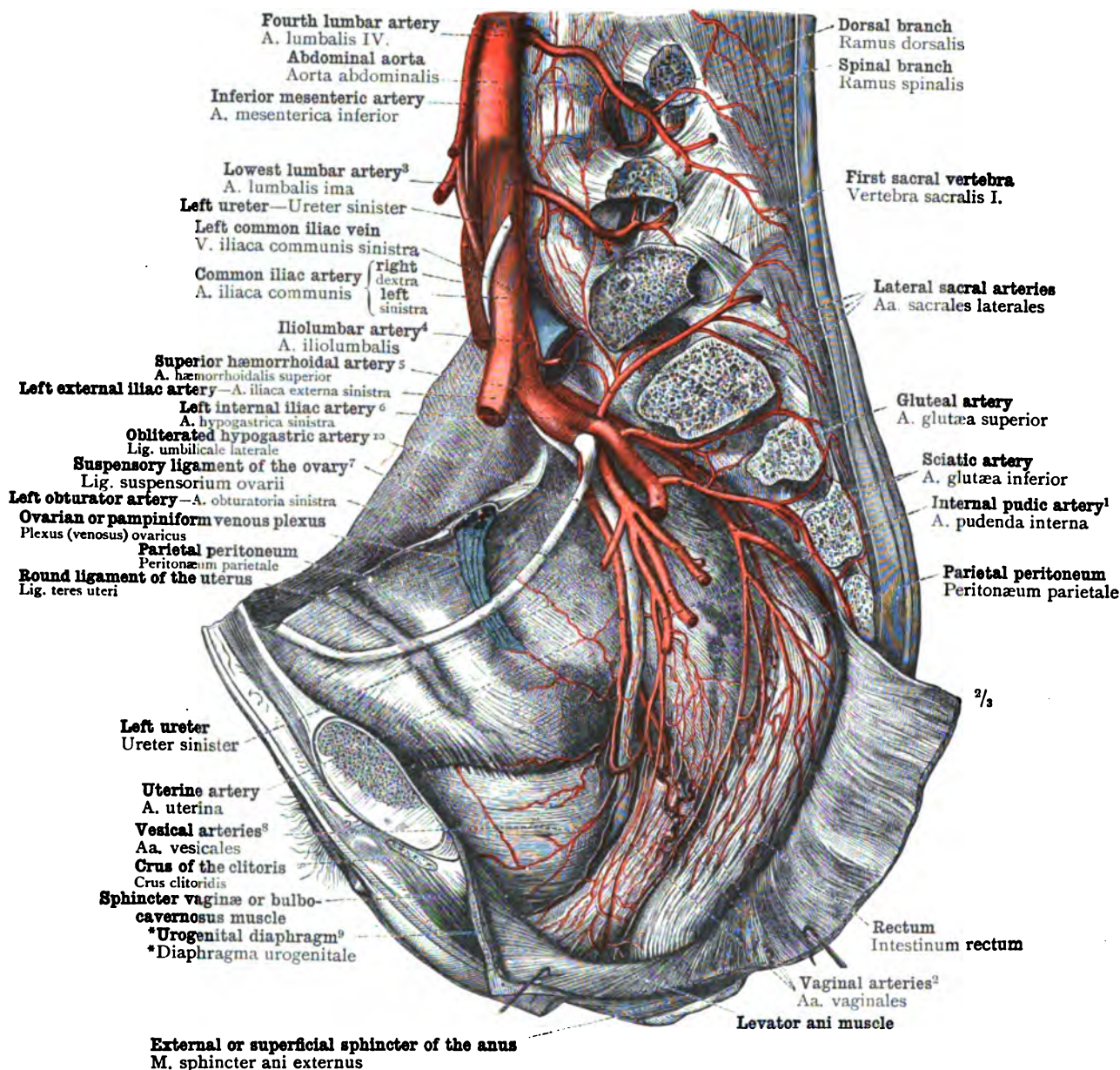
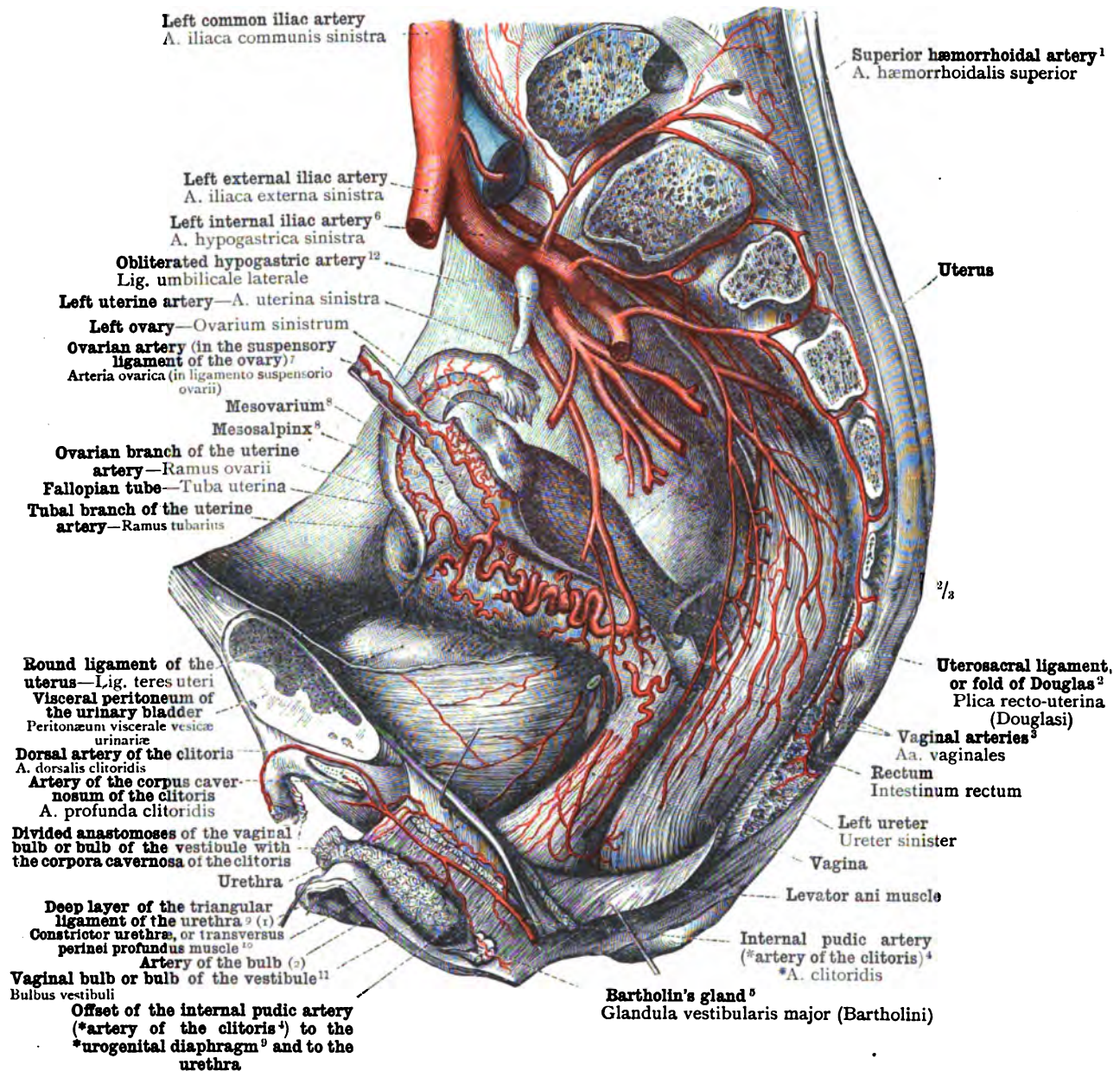
<sup>1</sup> See Appendix, note 139.<sup>2</sup> See Appendix, note 160.<sup>3</sup> See Appendix, note 126.<sup>4</sup> See Appendix, note 162.<sup>5</sup> Called by Macalister the *superior rectal artery*.<sup>6</sup> See Appendix, note 120.<sup>7</sup> Called also the *infundibulopelvic* or *ovariopelvic fold* or *ligament*.<sup>8</sup> See Appendix, note 162.<sup>10</sup> Or \*external umbilical ligament—see Appendix, note 142.<sup>9</sup> See Appendix, note 142.

FIG. 995.—THE LEFT INTERNAL ILIAC ARTERY, ARTERIA HYPOGASTRICA (*see Appendix, note 120*), AND ITS VISCERAL BRANCHES, RAMI VISCERALES, SEEN IN THE SUBPERITONEAL SPACE OF A FEMALE PELVIS: THE LOWEST OFFSETS OF THE SUPERIOR HÆMORRHOIDAL OR SUPERIOR RECTAL ARTERY, ARTERIA HÆMORRHOIDALIS SUPERIOR; THE UTERINE ARTERY, ARTERIA UTERINA, AS FAR AS ITS POINT OF ENTRANCE INTO THE BROAD LIGAMENT OF THE UTERUS (MESOMETRIUM); THE VAGINAL ARTERIES, ARTERIÆ VAGINALES (*see Appendix, note 100*); THE TERMINAL OFFSETS TO THE BLADDER, ARTERIÆ VESICALES (*see Appendix, note 102*), AND TO THE URETER. OF THE PARIETAL BRANCHES, RAMI PARIETALES, THE LATERAL SACRAL ARTERIES, ARTERIÆ SACRALES LATERALES, AND THE TWO LOWERMOST LUMBAR ARTERIES, ARTERIÆ LUMBALES, HAVE BEEN PRESERVED; THE SPINAL BRANCHES HAVE BEEN TRACED UP TO THEIR ENTRANCE INTO THE SPINAL CANAL.

The left lateral wall of the pelvis was removed by a section which in front passed close to the median plane, and behind, through the left row of sacral foramina; but the parietal peritoneal investment of this wall was preserved up to its reflection on to the urinary bladder, the vagina, and the rectum. The parts of these organs situate outside the peritoneum were laid bare, and the pelvic diaphragm (*see Appendix, note 140*) was turned downwards.

### The Arteries of the Female Pelvic Viscera.





(1) Fascia diaphragmatis urogenitalis superior

(2) A. bulbi vestibuli (vaginae)

<sup>1</sup> Called by Macalister the *superior rectal artery*.

<sup>3</sup> See Appendix, note 160.

<sup>5</sup> Known also as *Duvernoy's gland*, or the *suburethral gland*. (See Appendix to Part IV., note 66.)

<sup>7</sup> The *suspensory ligament of the ovary* is known also as the *infundibulopelvic ligament* or *ovariopelvic fold or ligament*.—Tr.

<sup>8</sup> See Appendix to Part IV., note 82.

<sup>9</sup> See Appendix to Part IV., note 99.

<sup>10</sup> *M. Transversus Perinei Profundus*.—For an account of the nomenclature of this muscle see Appendix to Part IV., note 101.—Tr.

<sup>11</sup> *Bulbus Vestibuli*.—Regarding the nomenclature of this structure, see Appendix to Part IV., note 91.—Tr.

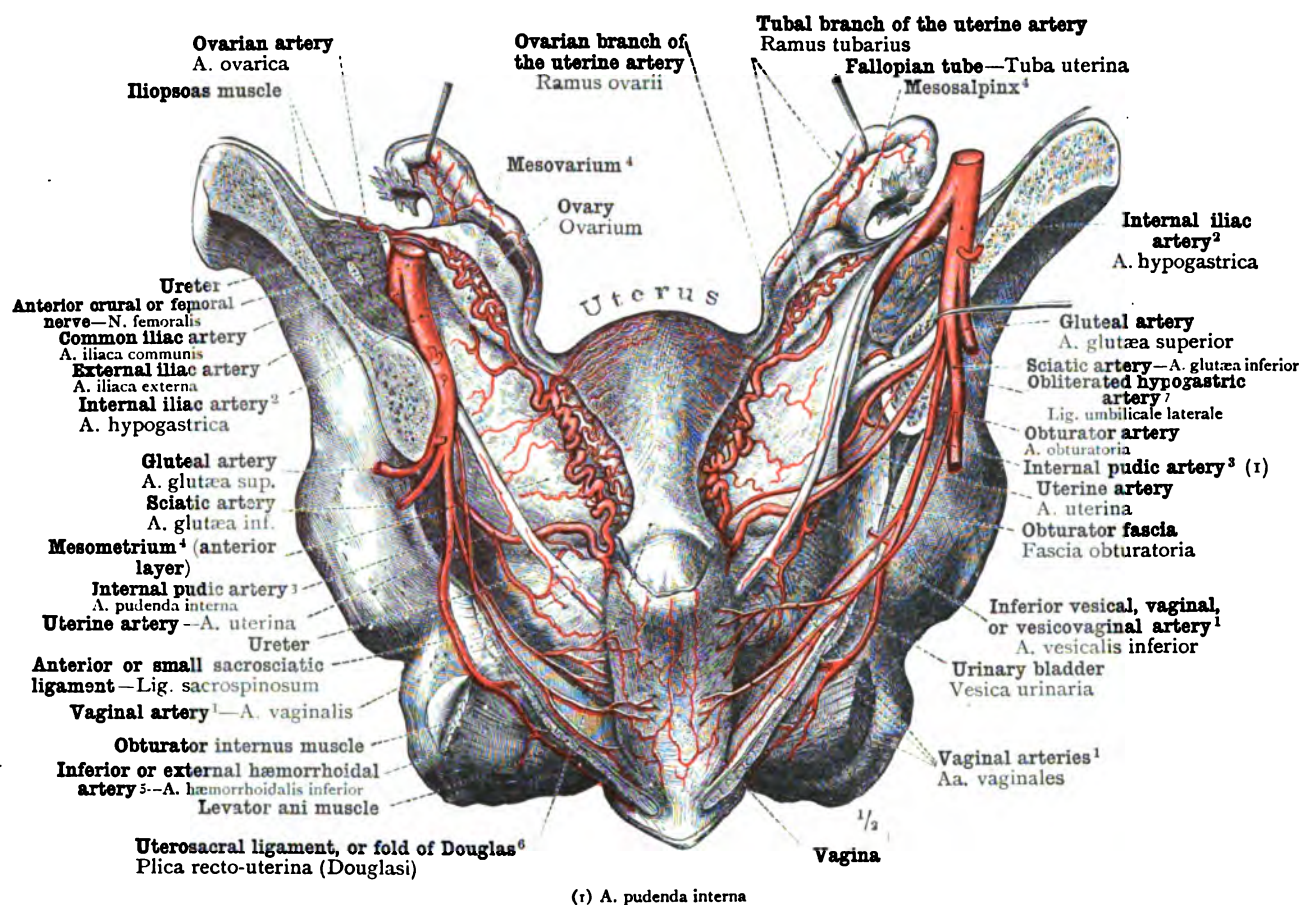
<sup>12</sup> Or *\*external umbilical ligament*—see Appendix, note 148.

FIG. 996.—THE DISTRIBUTION OF THE LATERAL SACRAL ARTERIES, ARTERIAE SACRALES LATERALES, THE SUPERIOR HÆMORRHOIDAL OR SUPERIOR RECTAL ARTERY, ARTERIA HÆMORRHOIDALIS SUPERIOR, THE UTERINE ARTERY, ARTERIA UTERINA, THE OVARIAN ARTERY, ARTERIA OVARICA, AND THE DISTAL PORTION OF THE INTERNAL PUDIC ARTERY, \*ARTERIA CLITORIDIS (see Appendix, note 156).

In the preparation shown in Fig. 995, the parietal peritoneum was cut away along the line of its reflection on to the rectum and the urinary bladder, and the mesometrium (*i.e.*, the broad ligament of the uterus) was severed along its attachment to the uterus, the Fallopian tube with its mesentery (the mesosalpinx) and also the suspensory ligament of the ovary were turned inwards and upwards, while the mesovarium was turned upwards and backwards, the lower layer of the latter was removed, and the ovarian artery with its ovarian offsets and its anastomosis with the uterine artery was displayed. The deep layer of the triangular ligament of the urethra was detached from the deep transverse perineal muscle and was drawn upwards, in order to show the branch of the internal pudic artery running forwards on the superficial surface of this deep layer. From a transversely disposed arch formed by the anastomosis of this branch with the corresponding vessel of the opposite side, several small offsets arise, which run forwards (downwards) along the urethra. By the removal of the superficial layer of the triangular ligament of the urethra the internal pudic artery (arteria clitoridis—see Appendix, note 156) was exposed up to its terminal bifurcation.

### The Arteries of the Female Pelvic Viscera.





¹ See Appendix, note 163.

² See Appendix, note 132.

³ See Appendix, note 132.

⁴ See Appendix to Part IV., note 82.

⁵ Called by Macalister the anal artery.

⁶ Known also as the recto-uterine fold or ligament.

⁷ Or external umbilical ligament—see Appendix, note 148.

FIG. 997.—THE ARTERIES OF THE UTERUS, THE OVARIES, THE FALLOPIAN TUBES, THE VAGINA, AND THE URINARY BLADDER, SEEN FROM BEHIND: THE OVARIAN ARTERY, ARTERIA OVARICA (ARTERIA SPERMATICA INTERNA); THE UTERINE ARTERY, ARTERIA UTERINA, WITH ITS OFFSETS TO THE OVARY (RAMUS OVARIUM), THE FALLOPIAN TUBE (RAMUS TUBARIUS), THE VAGINA ARTERIÆ VAGINALES—see Appendix, note 163, AND TO THE BLADDER (ARTERIA VESICALIS INFERIOR)—i.e., THE INFERIOR VESICAL, VAGINAL, OR VESICOVAGINAL ARTERY (IN THIS SPECIMEN ARISING FROM THE UTERINE ARTERY, INSTEAD OF, AS USUALLY, ARISING SEPARATELY FROM THE ANTERIOR DIVISION OF THE INTERNAL ILIAC ARTERY—see Appendix, note 163); THE INTERNAL PUDIC ARTERY, ARTERIA PUDENDA INTERNA, AND ITS OFFSETS TO THE VAGINA (see Appendix, note 163). THE PELVIC PORTION OF THE URETER, AND ITS RELATIONS TO THE UTERINE ARTERY, THE CERVIX UTERI, THE VAGINA, AND THE URINARY BLADDER.

By a frontal section passing on each side through the great sacrosclatic foramen, the posterior wall of the pelvis was removed, in order to display (after removing the rectum) the uterus and the vagina, and, in addition, the lateral parts of the bladder. The uterus and the vagina were drawn upwards, the ovaries upwards and forwards; the lower layer of the mesovarium and the hinder layer of the mesometrium were removed, and the ureters, thus exposed, were preserved as nearly as possible in their natural position. The right internal iliac artery was drawn outwards and backwards, to display more fully the origin of its branches and that of the obliterated hypogastric artery (see note 1 above). The branches of the posterior division of the artery have been cut away near their origin, and the internal pudic artery has on both sides been traced as far as its passage through the small sacrosclatic foramen.

### The Arteries of the Female Pelvic Viscera.



ARTERIÆ COLLI ET CAPITIS  
THE ARTERIES OF THE HEAD  
AND NECK

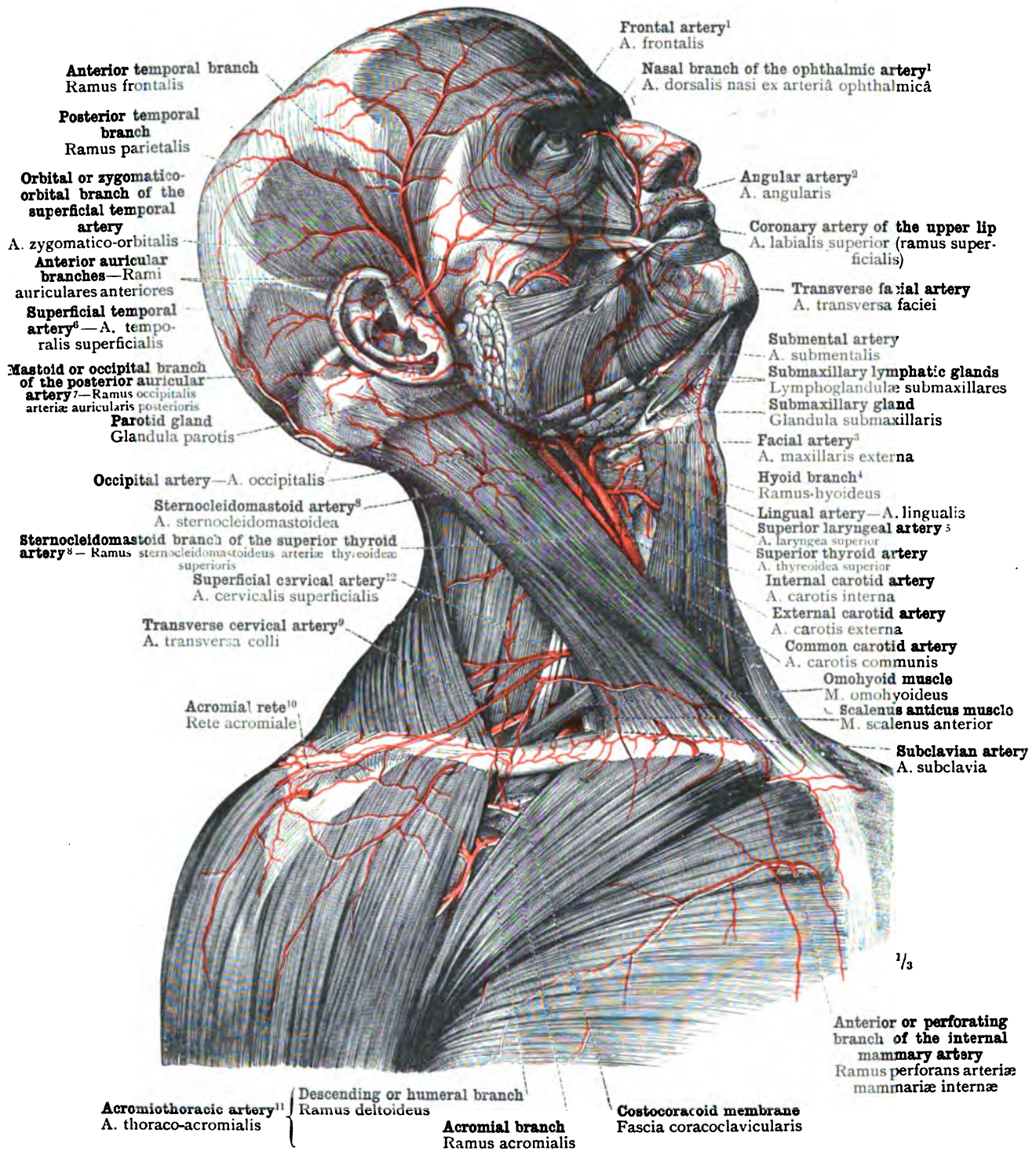
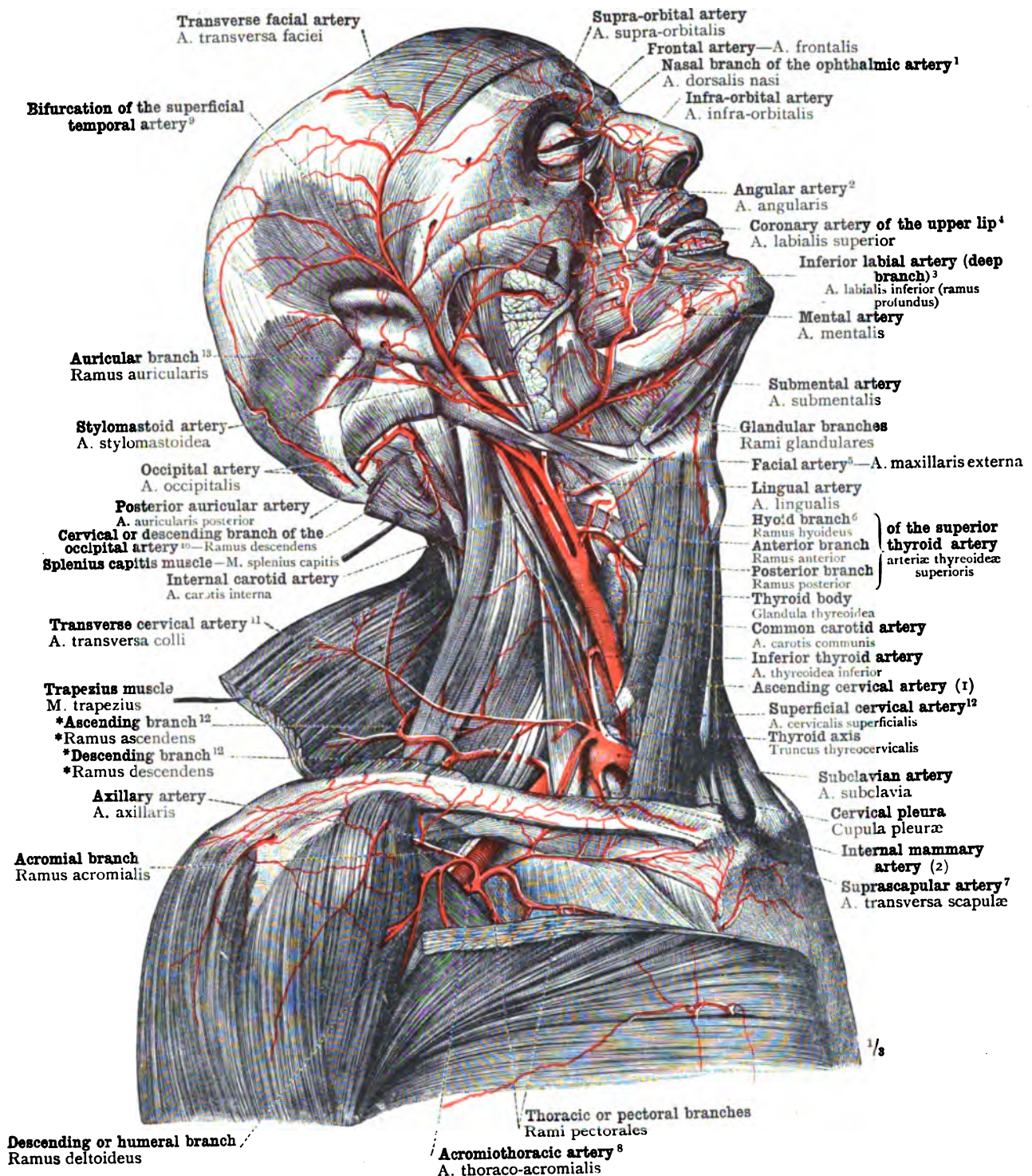
<sup>1</sup> See Appendix, note 164.<sup>2</sup> See Appendix, note 165.<sup>3</sup> See Appendix, note 166.<sup>4</sup> See Appendix, note 167.<sup>5</sup> Or laryngeal branch of the superior thyroid artery.<sup>6</sup> See Appendix, note 168.<sup>7</sup> Called by Macalister the posterior terminal branch of the posterior auricular artery.<sup>8</sup> Or posterior scapular artery (Macalister). See Appendix, note 172.—Tr.<sup>11</sup> Called by Macalister the thoraco-acromial artery.<sup>9</sup> See Appendix, note 169.<sup>10</sup> See Appendix, note 170.<sup>12</sup> See Appendix, note 172.

FIG. 998.—SUPERFICIAL ARTERIES OF THE HEAD AND NECK, AND OF THE UPPER PART OF THE PECTORAL REGION AND THE SHOULDER; SEEN FROM THE RIGHT SIDE.

Over the anterior part of the parotid gland, the parotidomasseteric fascia has been left intact. The lower ends of the levator labii superioris alæque nasi, levator labii superioris proprius, and zygomaticus minor muscles have been removed, to display the facial artery and the origin of the coronary artery of the upper lip.

The Superficial Branches of the External Carotid, Subclavian, and Axillary Arteries.





(1) A. cervicalis ascendens

(2) A. mammaria interna

<sup>1</sup> See Appendix, note 164.

<sup>4</sup> Called by Macalister the *superior coronary artery*.

<sup>6</sup> Called by Macalister the *infrahyoid artery*.

<sup>8</sup> Called by Macalister the *thoraco-acromial artery*.

<sup>10</sup> Known also as the *ramus cervicalis princeps*, or *arteria princeps cervicis*.

<sup>12</sup> See Appendix, note 172.

<sup>2</sup> See Appendix, note 165.

<sup>7</sup> Known also as the *transverse scapular* or *transverse humeral artery*.

<sup>9</sup> See Appendix, note 168.

<sup>11</sup> Or *posterior scapular artery* (Macalister).

<sup>13</sup> Called by Macalister the *anterior terminal branch of the posterior auricular artery*.

FIG. 999.—IN THE PREPARATION SHOWN IN FIG. 998, THE SUPERFICIAL MUSCLES OF THE FACE, THE HINDER PART OF THE PAROTID GLAND, THE SUBMAXILLARY GLAND, THE STERNOCLEIDOMASTOID MUSCLE, THE INFERIOR (POSTERIOR) BELLY OF THE OMOHYOID MUSCLE, THE UPPER PART OF THE CLAVICULAR PORTION OF THE PECTORALIS MAJOR MUSCLE, AND THE DEEP LAYER OF THE PECTORAL FASCIA, WERE REMOVED. THE ORBICULARIS ORIS MUSCLE WAS INCISED ABOVE AND BELOW THE APERTURE OF THE MOUTH (RIMA ORIS) AND PARALLEL WITH THAT APERTURE, THE INCISION PENETRATING TO THE LABIAL GLANDS, IN ORDER TO EXPOSE THE CORONARY ARTERIES OF THE LIPS.



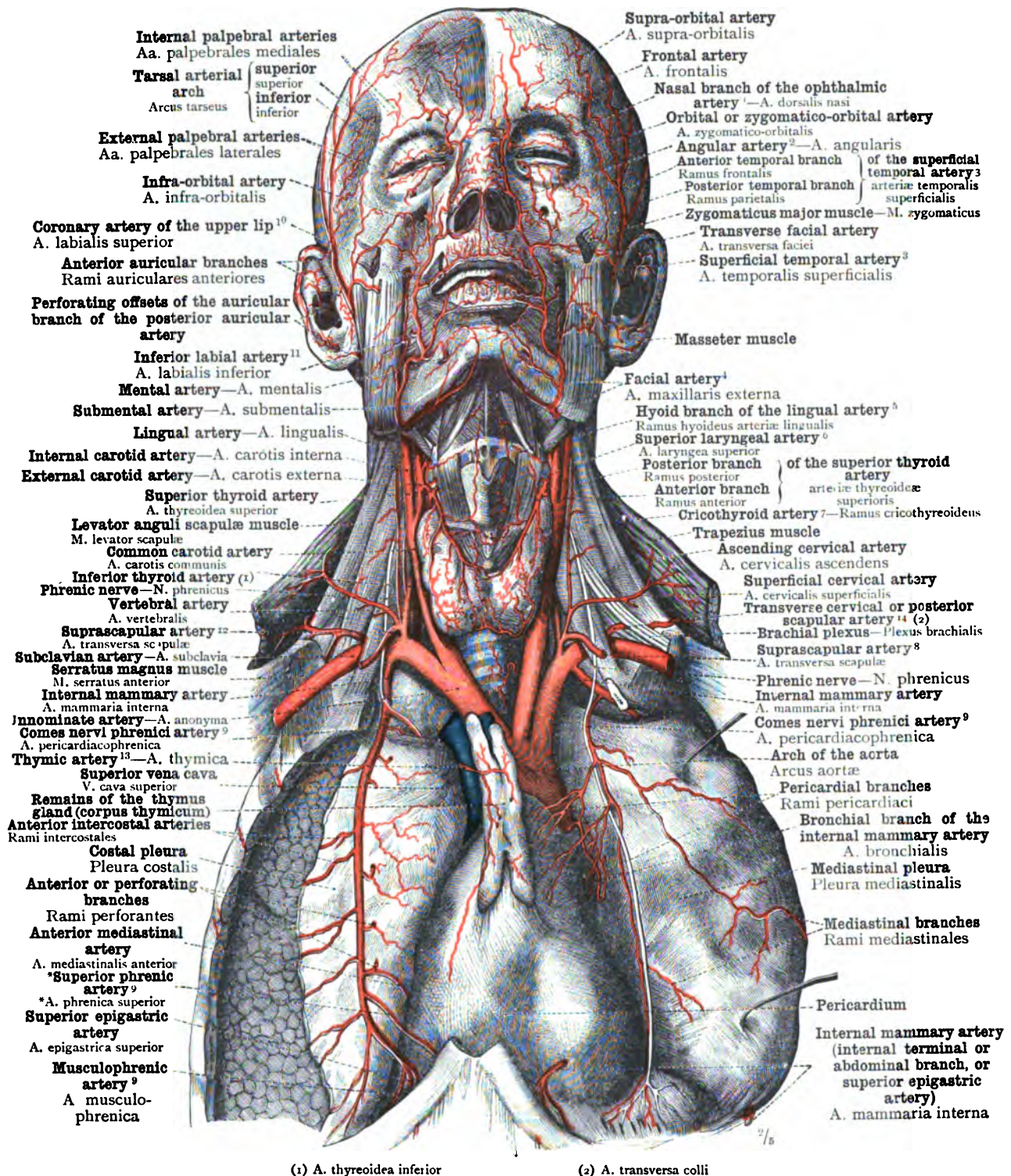
<sup>1</sup> See Appendix, note 164.<sup>2</sup> See Appendix, note 165.<sup>3</sup> See Appendix, note 168.<sup>4</sup> See Appendix, note 166.<sup>5</sup> Called by Macalister the *suprahyoid artery*. See Appendix, note 167.<sup>6</sup> Or *laryngeal branch of the superior thyroid artery*.<sup>7</sup> See Appendix, note 173.<sup>8</sup> Known also as the *transverse scapular or transverse humeral artery*.<sup>9</sup> See Appendix, note 174.<sup>10</sup> Called by Macalister the *superior coronary artery*.<sup>11</sup> See Appendix, note 175.<sup>12</sup> Called also the *transverse scapular or transverse humeral artery*.<sup>13</sup> See Appendix, note 172.

FIG. 1000.—ON THE RIGHT SIDE OF THE BODY, THE COSTAL PLEURA AND THE LUNG HAVE BEEN PUSHED SOMEWHAT BACKWARDS; AND BETWEEN THE INTERNAL MAMMARY ARTERY AND THE ANTERIOR CUT SURFACES OF THE RIBS THE COSTAL PLEURA HAS BEEN REMOVED, EXPOSING THE SURFACE OF THE LUNG. THE LEFT LAYER OF THE MEDIASTINUM HAS BEEN SEPARATED FROM ITS ATTACHMENTS AS FAR BACK AS THE ROOT OF THE LUNG, AND HAS BEEN DRAWN OUTWARDS WITH THAT ORGAN.

The Distribution of the Branches of the Arch of the Aorta in the Head and Neck, and the Distribution of the Internal Mammary Artery.



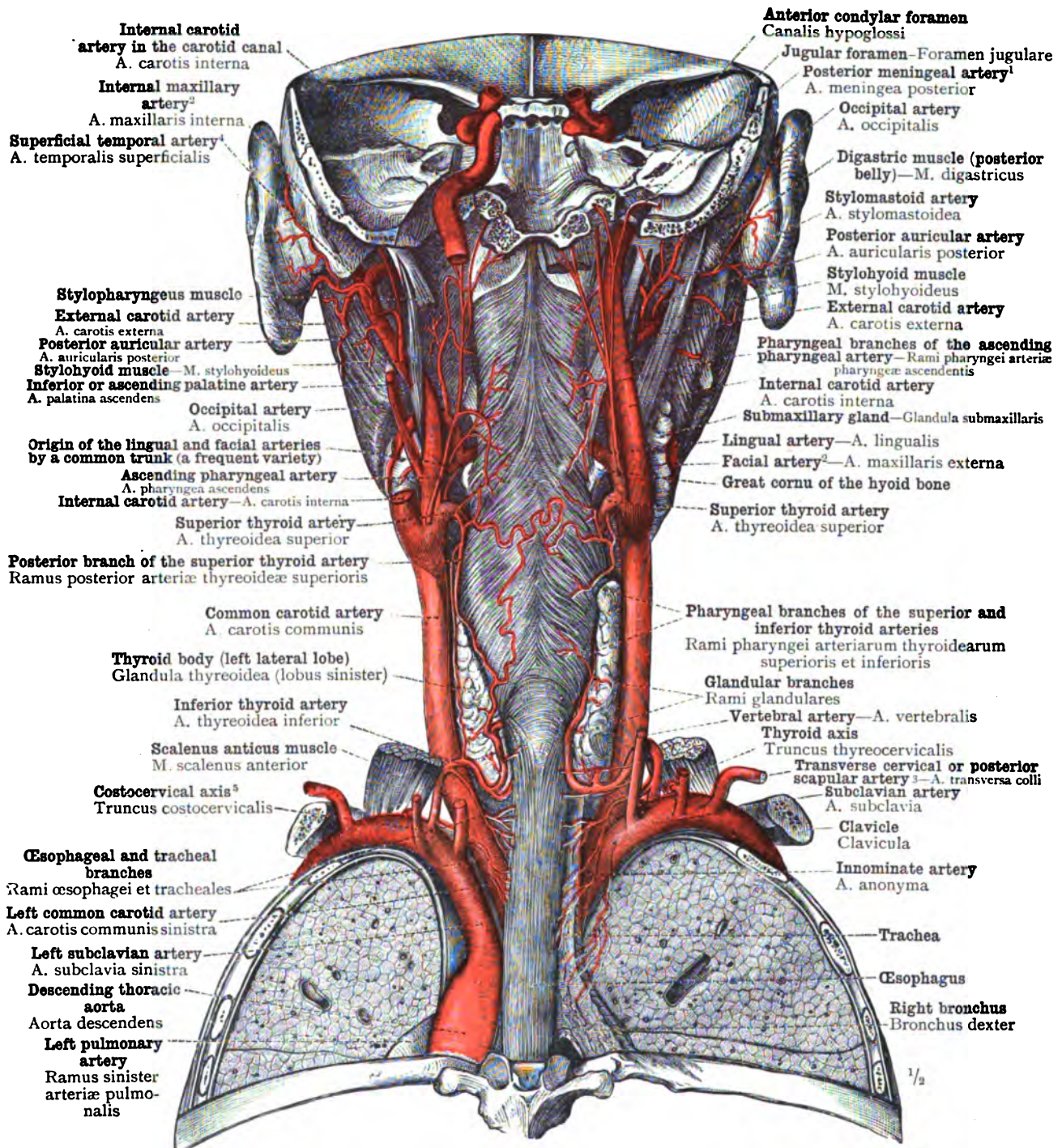
<sup>1</sup> See Appendix, note 176.<sup>2</sup> See Appendix, note 166.<sup>3</sup> See Appendix, note 172.<sup>4</sup> See Appendix, note 168.<sup>5</sup> See Appendix, note 177.

FIG. 1001.—THE BRANCHES OF THE ARCH OF THE AORTA AND THE ARTERIES OF THE NECK, SEEN FROM BEHIND. THE ARTERIES OF THE PHARYNX: THE ASCENDING PHARYNGEAL ARTERY, ARTERIA PHARYNGEA ASCENDENS, ITS PHARYNGEAL BRANCHES, RAMI PHARYNGEI, AND ITS MENINGEAL BRANCH (see Appendix, note 176), ARTERIA MENINGEA POSTERIOR, TO THE HINDER PART OF THE DURA MATER; THE PHARYNGEAL BRANCHES, RAMI PHARYNGEI, OF THE SUPERIOR AND INFERIOR THYROID ARTERIES; THE ESOPHAGEAL AND TRACHEAL BRANCHES, RAMI ESOPHAGEI ET TRACHEALES, OF THE INFERIOR THYROID ARTERY.

Arteria subclavia, the subclavian artery, arteria carotis communis, the common carotid artery, arteria carotis interna, the internal carotid artery; the arteries of the pharynx, the trachea, and the œsophagus.



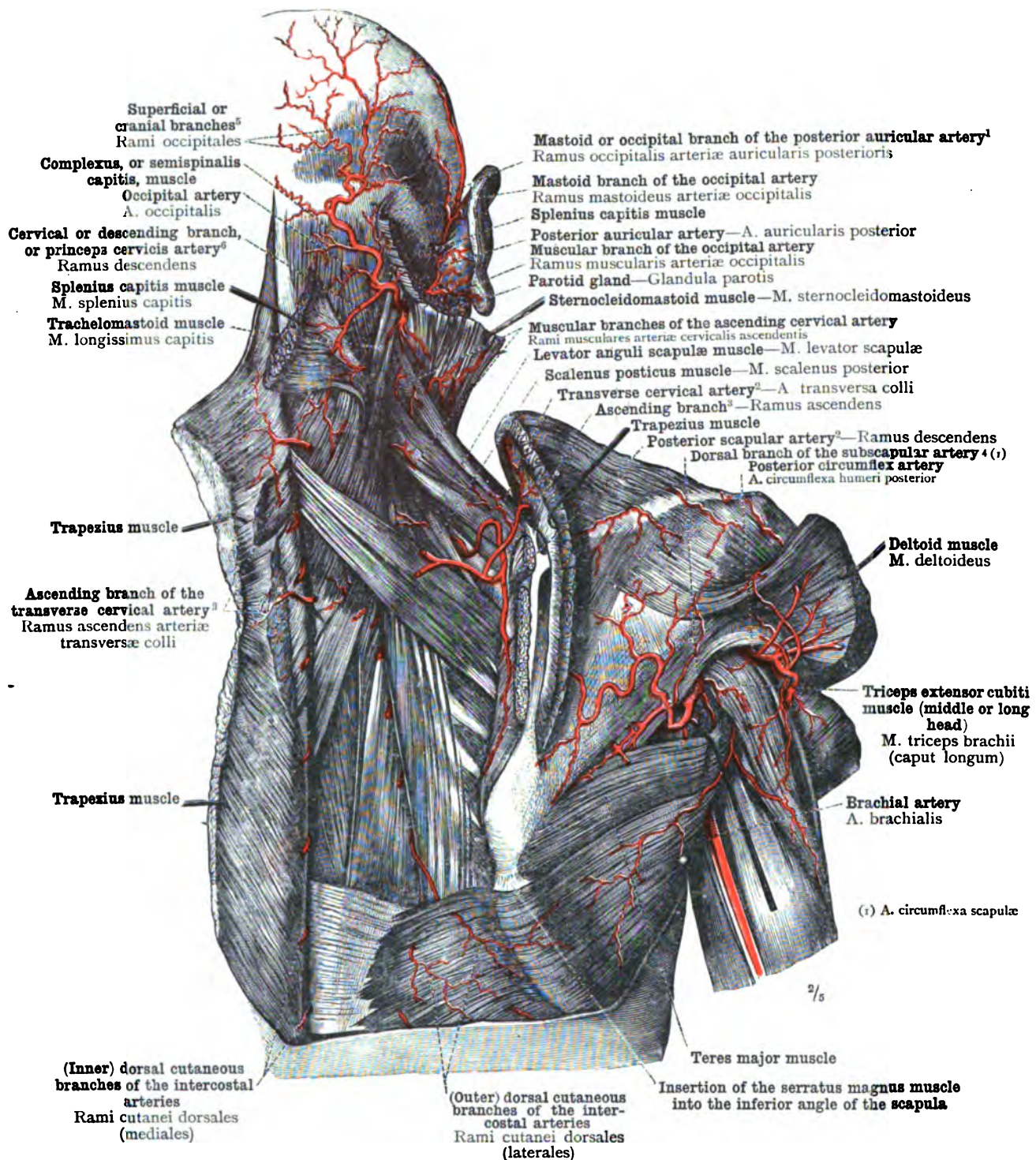


FIG. 1002.—THE DEEP ARTERIES OF THE RIGHT NUCHAL REGION AND THE BACK OF THE RIGHT SHOULDER ; SEEN FROM BEHIND.

The scapula was drawn a little away from the trunk ; a horizontal incision was made through the posterior half of the deltoid muscle a little above the middle of its vertical extent, and the muscle was turned forwards ; the teres major muscle was drawn somewhat downwards. The superficial offsets only of the dorsal branch of the subscapular artery (dorsalis scapulae artery—arteria circumflexa scapulae) are seen, on the surface of the infraspinous fascia ; the deeper branches of this artery, ramifying beneath the infraspinatus muscle, are shown in Fig. 1000.

Arteria occipitalis, the occipital artery ; arteria transversa colli, the transverse cervical (or posterior scapular) artery ; arteria circumflexa scapulae, the dorsal branch of the subscapular or dorsalis scapulae artery ; and arteria circumflexa humeri posterior, the posterior circumflex artery (of the arm).

<sup>1</sup> Called by Macalister the *posterior terminal branch* of the *posterior auricular artery*.

<sup>2</sup> See Appendix, note 172.

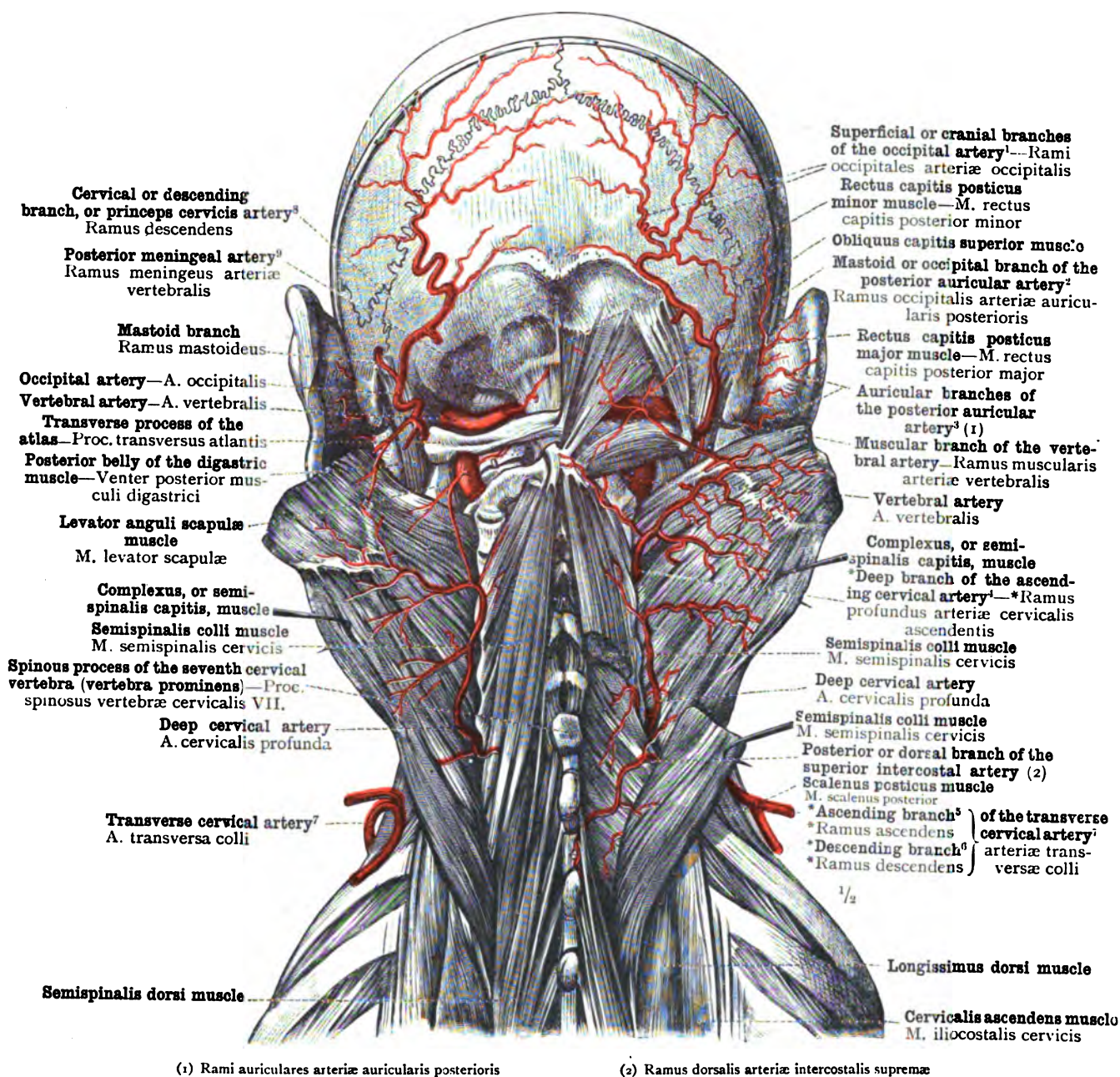
<sup>3</sup> In Macalister's terminology this is the *cervical branch* of the *transverse cervical* or *posterior scapular artery*. See Appendix, note 172.

<sup>4</sup> Commonly known in England as the *dorsalis scapulae artery*.

<sup>5</sup> Called by Macalister the *external* and *internal terminal branches* of the *occipital artery*.

<sup>6</sup> Or *ramus cervicis princeps arteriae occipitalis*.





<sup>1</sup> Called by Macalister the *external* and *internal terminal branches* of the *occipital artery*.

<sup>2</sup> Called by Macalister the *posterior terminal branch* of the *posterior auricular artery*.

<sup>3</sup> The branch of the *posterior auricular artery* from which these offsets are derived is called by Macalister the *anterior terminal branch*.

<sup>4</sup> See Appendix, note <sup>173</sup>.

<sup>5</sup> Called by Macalister the *cervical branch* of the *transverse cervical* or *posterior scapular artery*. See Appendix, note <sup>172</sup>.

<sup>6</sup> The *posterior scapular artery* of English anatomists. See Appendix, note <sup>172</sup>.

<sup>7</sup> *Transverse cervical* or *posterior scapular artery*, according to Macalister. See Appendix, note <sup>172</sup>.

<sup>8</sup> Or *ramus cervicis principis arteriae occipitalis*.

<sup>9</sup> See Appendix, note <sup>176</sup>.

FIG. 1003.—THE ARTERIES OF THE OCCIPITAL REGION, AND THE DEEPEST ARTERIES OF THE NUCHAL REGION. ON THE LEFT SIDE, THE COMPLEXUS OR SEMISPINALIS CAPITIS MUSCLE IS SUPPLIED BY THE DEEP CERVICAL ARTERY; ON THE RIGHT SIDE, HOWEVER, THIS MUSCLE IS FURNISHED WITH BLOOD BY A LARGE MUSCULAR OFFSET OF THE ASCENDING CERVICAL ARTERY, KNOWN AS THE DEEP BRANCH, RAMUS PROFUNDUS (see Appendix, note <sup>178</sup>). THE RIGHT TRANSVERSE CERVICAL ARTERY (see note <sup>7</sup> above) PERFORATES THE SCALENUS POSTICUS MUSCLE: THIS IS A FREQUENT VARIETY.

In the preparation shown in Fig. 1002, the complexus or semispinalis capitis muscle was separated on each side from its attachment to the skull, and turned outwards. On the right side, the semispinalis colli was cut across a little above the middle of its vertical extent, and the lower segment was drawn outwards, in order to display the passage of the deep cervical artery between the transverse processes of the seventh cervical and first dorsal vertebrae. On the left side, the rectus capitis posticus major, rectus capitis posticus minor, obliquus capitis superior, and obliquus capitis inferior muscles have been removed, and the vertebral artery has thus been fully exposed both above and below the atlas.

**Arteriae cervicalis profunda, vertebralis et occipitalis**—The deep cervical, vertebral, and occipital arteries.



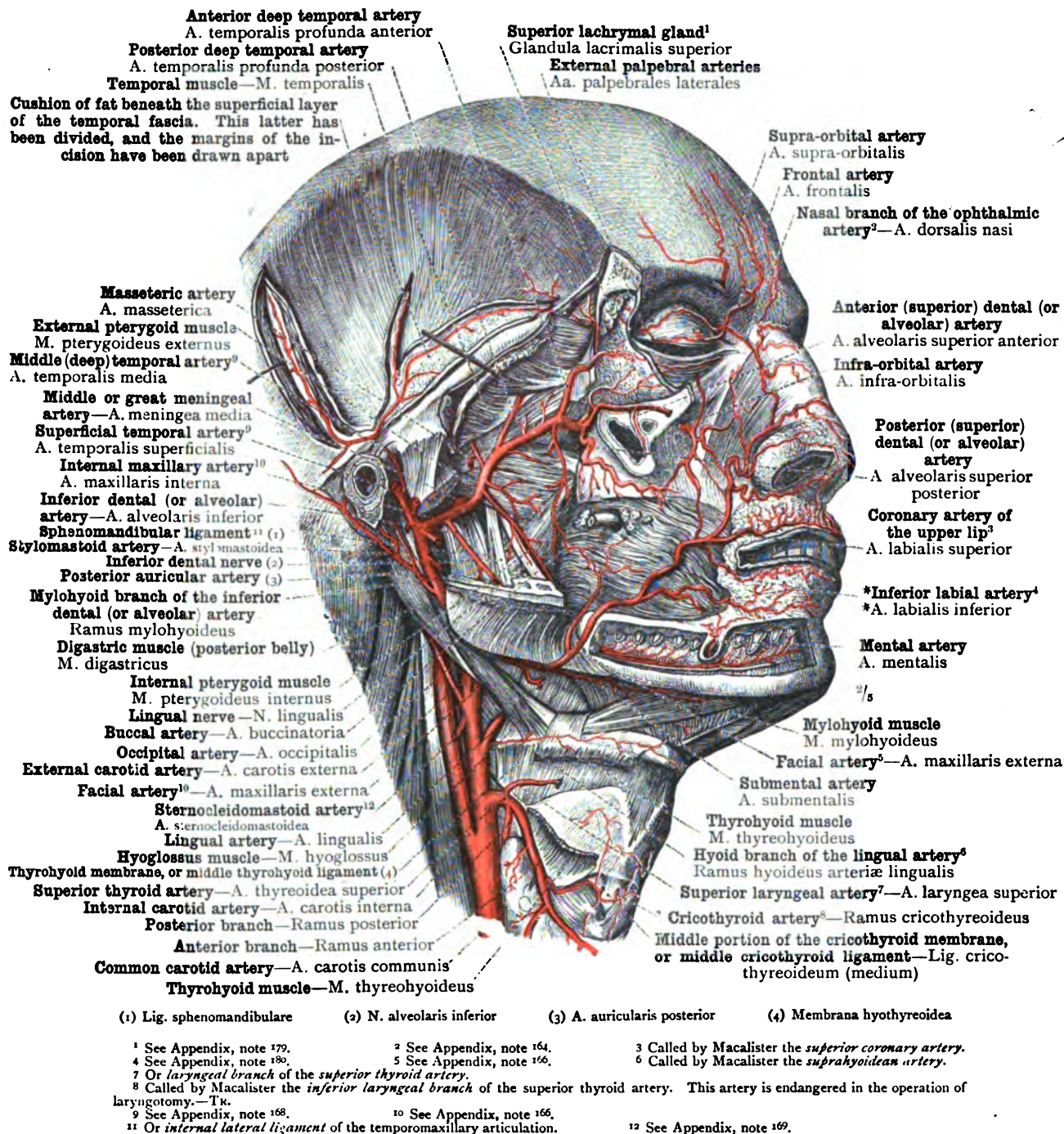


FIG. 1004.—THE ARTERIES OF THE UPPER PART OF THE FRONT OF THE NECK, OF THE RETROMANDIBULAR FOSSA (FOSSA RETROMANDIBULARIS), AND OF THE ZYGOMATIC FOSSA (FOSSA INFRATEMPORALIS); SEEN FROM THE RIGHT SIDE.

In the preparation shown in Fig. 999, the pinna or auricle was cut away, and the superficial temporal artery was removed above the point at which the middle (deep) temporal branch (arteria temporalis media) is given off. The zygomatic arch was removed, together with the greater part of the masseter muscle, and the ramus of the mandible was cut away from the neck to below the middle of its vertical extent, the sphenomandibular ligament or internal lateral ligament of the temporomaxillary articulation, however, being left intact. The anterior portion of the outer wall of the orbit was removed, the orbital periosteum being preserved; the upper segment of the temporal muscle was drawn upwards; and the superficial layer of the temporal fascia having been incised and the margins of the incision having been drawn apart, the cushion of fat beneath this superficial layer, and the anterior division of the middle (deep) temporal artery, were exposed; the posterior division of this artery was exposed by an incision through the temporal fascia and the temporal muscle. The thyrohyoid muscle was for the most part removed, in order to lay bare the superior laryngeal artery perforating the thyrohyoid membrane or middle thyrohyoid ligament.

Arteria maxillaris interna—The internal maxillary artery.



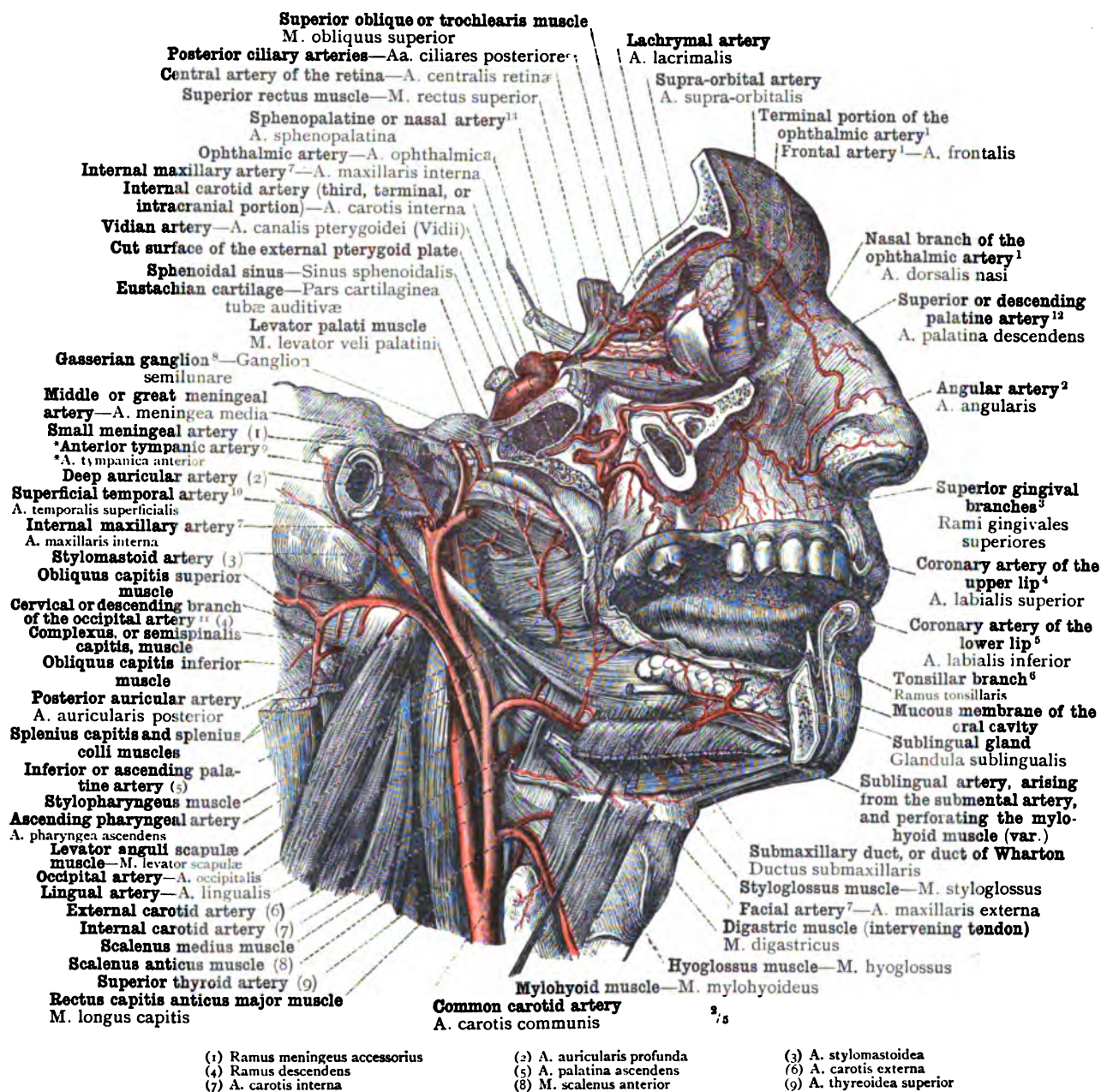
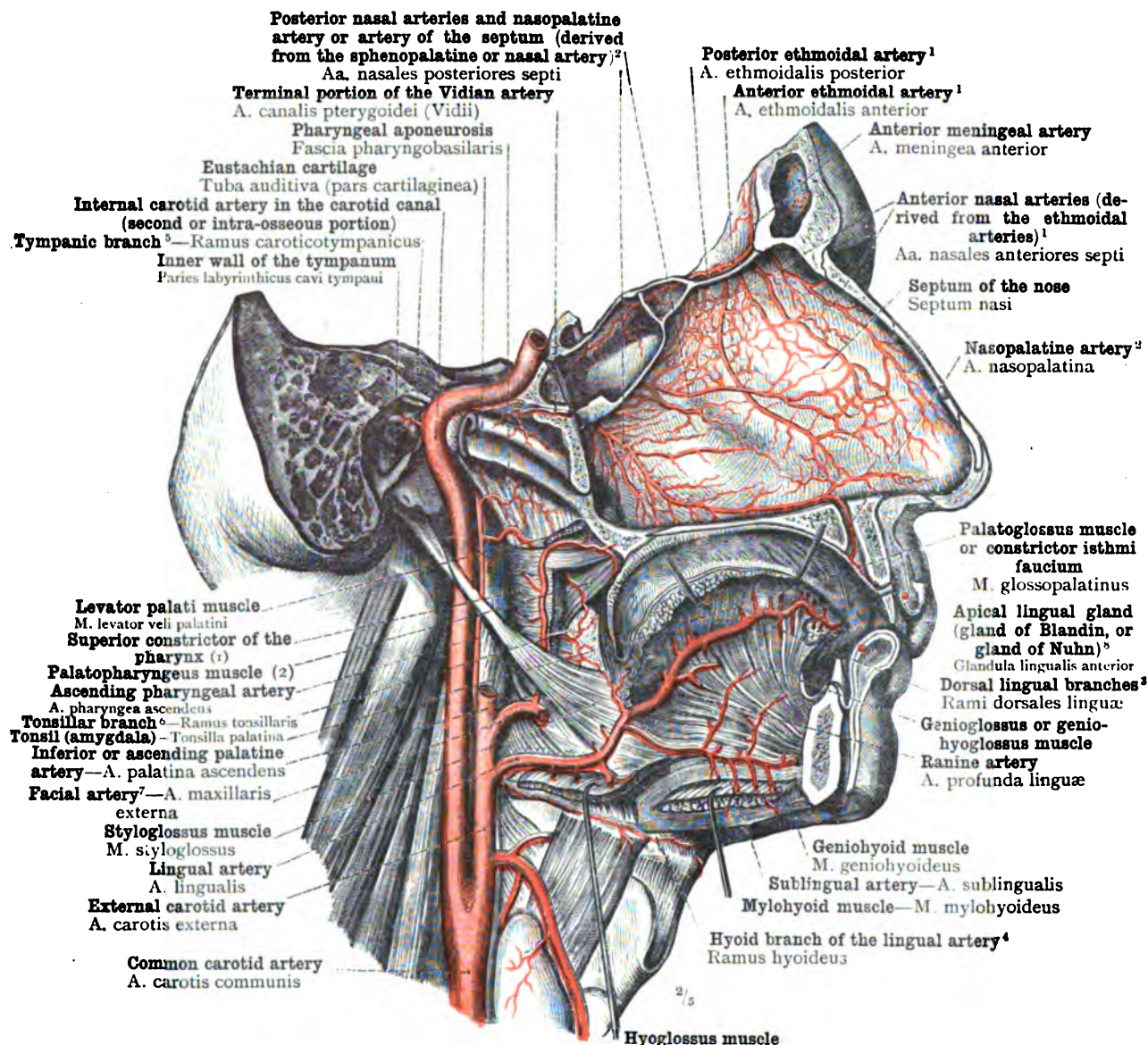


FIG. 1005.—THE ARTERIES OF THE ORBIT, THE TERMINAL BRANCHES OF THE INTERNAL MAXILLARY ARTERY, THE ARTERIES OF THE PHARYNX, AND THE ARTERIES OF THE SUBLINGUAL REGION; SEEN FROM THE RIGHT SIDE.

In the preparation shown in Fig. 1004, the right half of the mandible was removed as far forward as the attachment of the digastric muscle, together with the external and internal pterygoid muscles and the second (middle) part of the internal maxillary artery, and by turning down the mylohyoid muscle the sublingual gland was exposed. By a sagittal section, which opened the infra-orbital canal, the outer half of the orbit was removed, the contents of the cavity, however, being preserved. By a section which opened the anterior part of the Vidian or pterygoid canal, the right sphenoidal sinus, the foramen rotundum, the foramen ovale, and the foramen spinosum, the greater part of the floor of the middle cranial fossa was removed, and, after the external pterygoid plate with the circumflexus or tensor palati muscle had been cut away, the origin of the branches of the third (terminal) part of the internal maxillary artery in the sphenomaxillary fossa was displayed.

A. maxillaris interna, the internal maxillary artery; a. ophthalmica, the ophthalmic artery; a. pharyngea ascendens, the ascending pharyngeal artery; a. palatina ascendens, the inferior or ascending palatine artery; a. sublingualis, the sublingual artery.





(1) M. constrictor pharyngis superior

(2) M. pharyngopalatinus

<sup>1</sup> See Appendix, note 184.<sup>2</sup> See Appendix, note 185.<sup>3</sup> See Appendix, note 185.<sup>4</sup> Called by Macalister the *suprahyoid artery*.<sup>5</sup> See Appendix, note 187.<sup>6</sup> See Appendix, note 182.<sup>7</sup> See Appendix, note 166.<sup>8</sup> See note 2 to p. 420 in Part IV.

FIG. 1006.—ARTERIES OF THE NASAL SEPTUM, THE TONGUE, AND THE PHARYNX; SEEN FROM THE RIGHT SIDE.

In the preparation shown in Fig. 1005, by a sagittal section passing a little to the right of the median plane, the right side of the septum of the nose was exposed; by a section somewhat further to the right, the lower part of the internal pterygoid plate was removed, and the Vidian or pterygoid canal was opened up to its posterior orifice. By means of a section passing through the temporal bone itself, the direction of which was nearly that of the axis of the petrous portion of the temporal bone, the middle ear was opened, and also the carotid canal, by the removal of its outer wall. The posterior extremity of the Eustachian cartilage was cut away, the levator palati muscle was removed just above the point at which it enters the soft palate, and the pharyngeal aponeurosis was laid bare down to the upper border of the superior constrictor of the pharynx. By the removal of the anterior portion of this muscle, the outer surface of the tonsil (amygdala) was exposed. By the partial removal of the hyoglossus muscle and by drawing its lower segment downwards, the lingual artery was laid bare; and by the partial removal of the intrinsic muscular substance of the tongue, the ranine artery was brought into view.

Arteries of the septum of the nose. A. lingualis, the lingual artery. Aa. pharyngea et palatina ascendens, the ascending pharyngeal and ascending palatine arteries. A. carotis interna, the internal carotid artery.



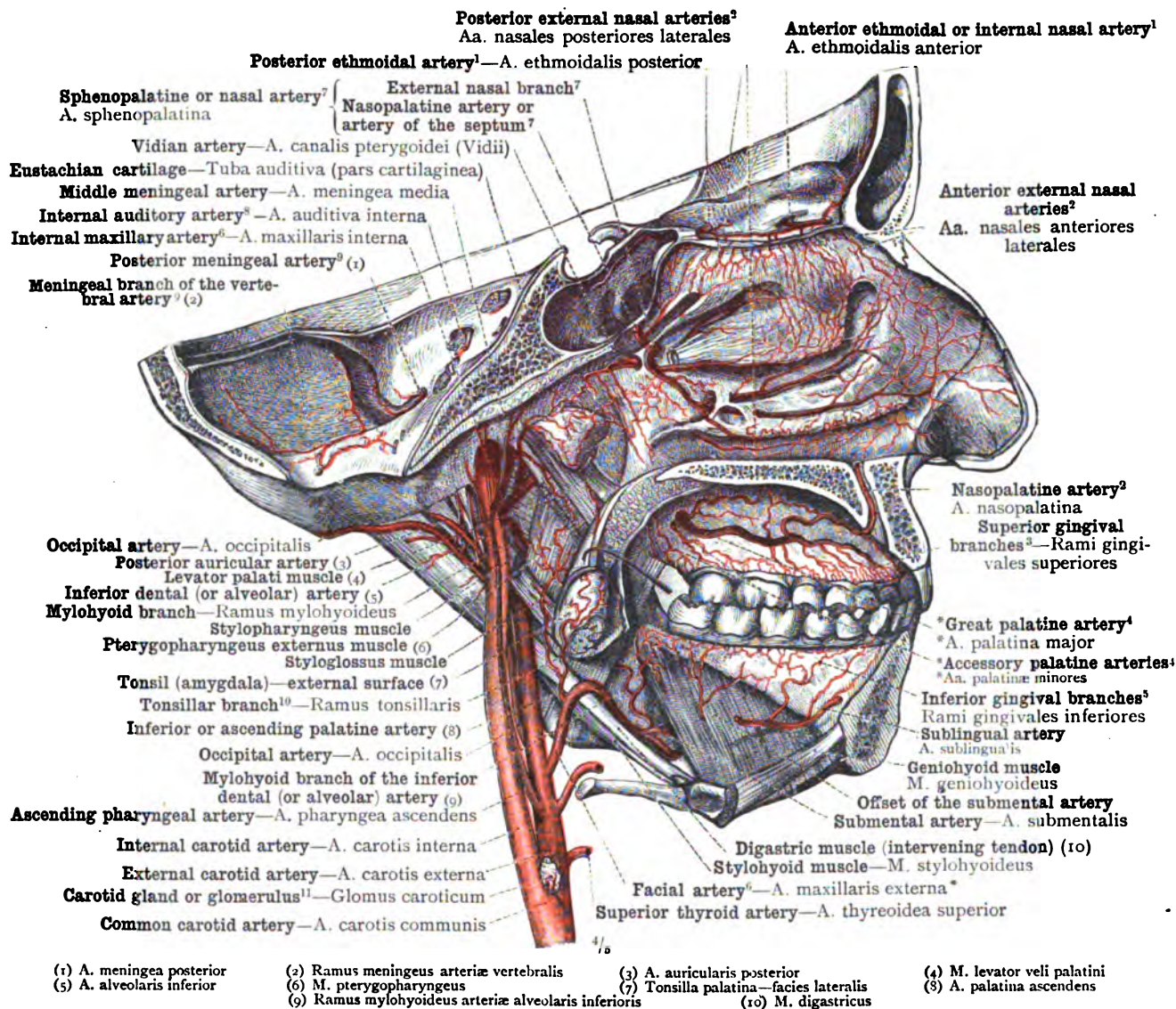


FIG. 1007.—THE ARTERIES OF THE EXTERNAL WALL OF THE NASAL FOSSÆ, OF THE CARTILAGINOUS PORTION OF THE EUSTACHIAN TUBE, OF THE HARD PALATE, OF THE TONSIL (AMYGDALA), AND OF THE EXTERNAL WALL OF THE MOUTH; THE SMALLER MENINGEAL ARTERIES; THE INTERNAL CAROTID ARTERY, THE EXTERNAL CAROTID ARTERY AND ITS BRANCHES. LEFT HALF OF THE HEAD SEEN FROM THE INNER SIDE.

By a sagittal section passing a little to the left of the median plane, the right half of the head was removed, the spinal column having first been cut away. After the pharynx had been removed, the left external and internal carotid arteries, as well as the branches of the former artery, were exposed from within. The left half of the soft palate and the left tonsil (amygdala) were retained, the latter being drawn a little forward, in order to display the ramification on its surface of the offsets of the tonsillar branch of the ascending palatine artery. Behind the levator palati muscle, a narrow strip of the pterygopharyngeus externus muscle was preserved. The posterior extremity of the middle turbinate bone was removed, in order to expose the lower posterior external nasal branch of the sphenopalatine or nasal artery. In the oral cavity, the tongue and the sublingual gland were removed, the mylohyoid and geniohyoid muscles as well as the anterior portion of the sublingual artery being preserved, and the inferior gingival branches were exposed, springing from the sublingual artery, from a perforating offset of the submental artery, and from the mylohyoid branch of the inferior dental (or alveolar) artery.

Arteries of the external wall of the nasal fossæ: A. pterygopalatina, the superior or descending palatine artery. A. canalis pterygoidei, the Vidian artery. Aa. pharyngea et palatina ascendens, the ascending pharyngeal and the inferior or ascending palatine artery.

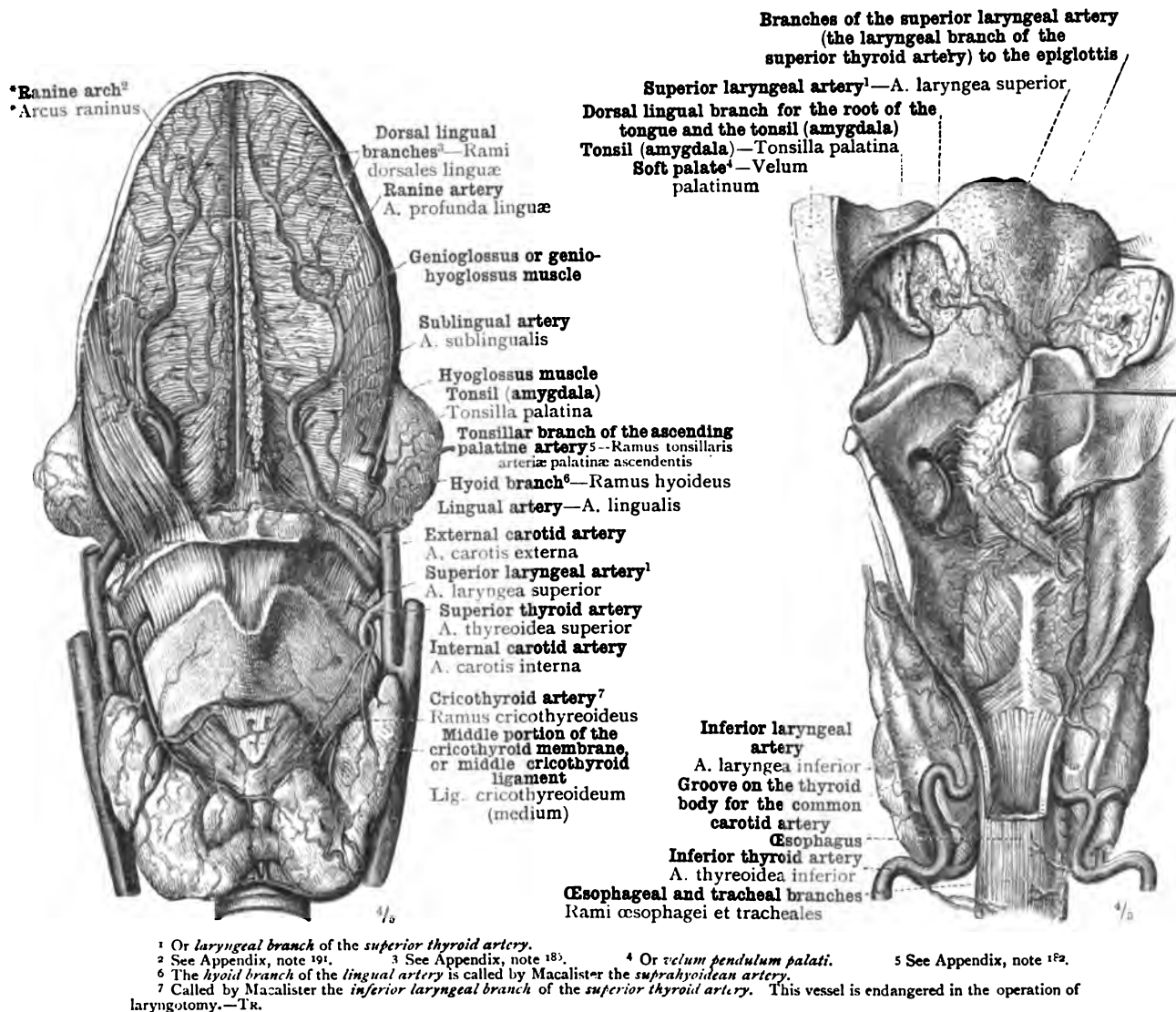


FIG. 1008.—THE TONGUE, THE LARYNX, AND THE THYROID BODY, SEEN FROM THE VENTRAL SIDE. THE RAMIFICATION OF THE RANINE ARTERY, ARTERIA PROFUNDA LINGUÆ, AND THE TRANSVERSE ANASTOMOSIS BETWEEN THE TWO RANINE ARTERIES, KNOWN AS THE \*RANINE ARCH, \*ARCUS RANINUS (see Appendix, note 191); THE LINGUAL ARTERY, ARTERIA LINGUALIS, WITH ITS HYOID BRANCH, RAMUS HYOIDEUS (see note 6 above); THE ARTERIES OF THE TONSIL (AMYGDALA), TONSILLA PALATINA; THE SUPERIOR THYROID ARTERY, ARTERIA THYROIDEA SUPERIOR, WITH THE SUPERIOR LARYNGEAL ARTERY, ARTERIA LARYNGEA SUPERIOR (see note 1 above), AND THE CRICOTHYROID ARTERY, RAMUS CRICOTHYROIDEUS (see note 7 above).

In the right half of the tongue the hyoglossus muscle has been preserved; in the left half it has been removed, and the left lingual artery has thus been fully exposed. The sublingual artery, arteria sublingualis, has been cut away on both sides close to its origin; the dorsal lingual branches have been traced for a considerable distance by the partial removal of the intrinsic muscular substance of the tongue.

FIG. 1009.—THE ROOT OF THE TONGUE, THE LARYNX, AND THE LARYNGEAL PORTION OF THE PHARYNX, WITH THE ADJOINING PORTION OF THE OESOPHAGUS AND THE THYROID BODY; SEEN FROM THE DORSAL SIDE.

After the posterior wall of the pharynx had been removed, the mucous membrane covering the left pyriform sinus and the anterior wall of the pharynx as far down as the commencement of the oesophagus was dissected off, and the superior and inferior laryngeal arteries were exposed. The epiglottis was drawn to the right, in order to display the offsets with which it is supplied by the superior laryngeal artery. On both sides the mucous membrane of the root of the tongue and of the tonsils was partially removed, in order to expose the site of emergence on the dorsum of the muscular substance of the tongue of the hindmost dorsal lingual branch, and the superficial ramification of that artery.

### Arteries of the Tongue, the Larynx, the Tonsil (Amygdala), and the Thyroid Body.



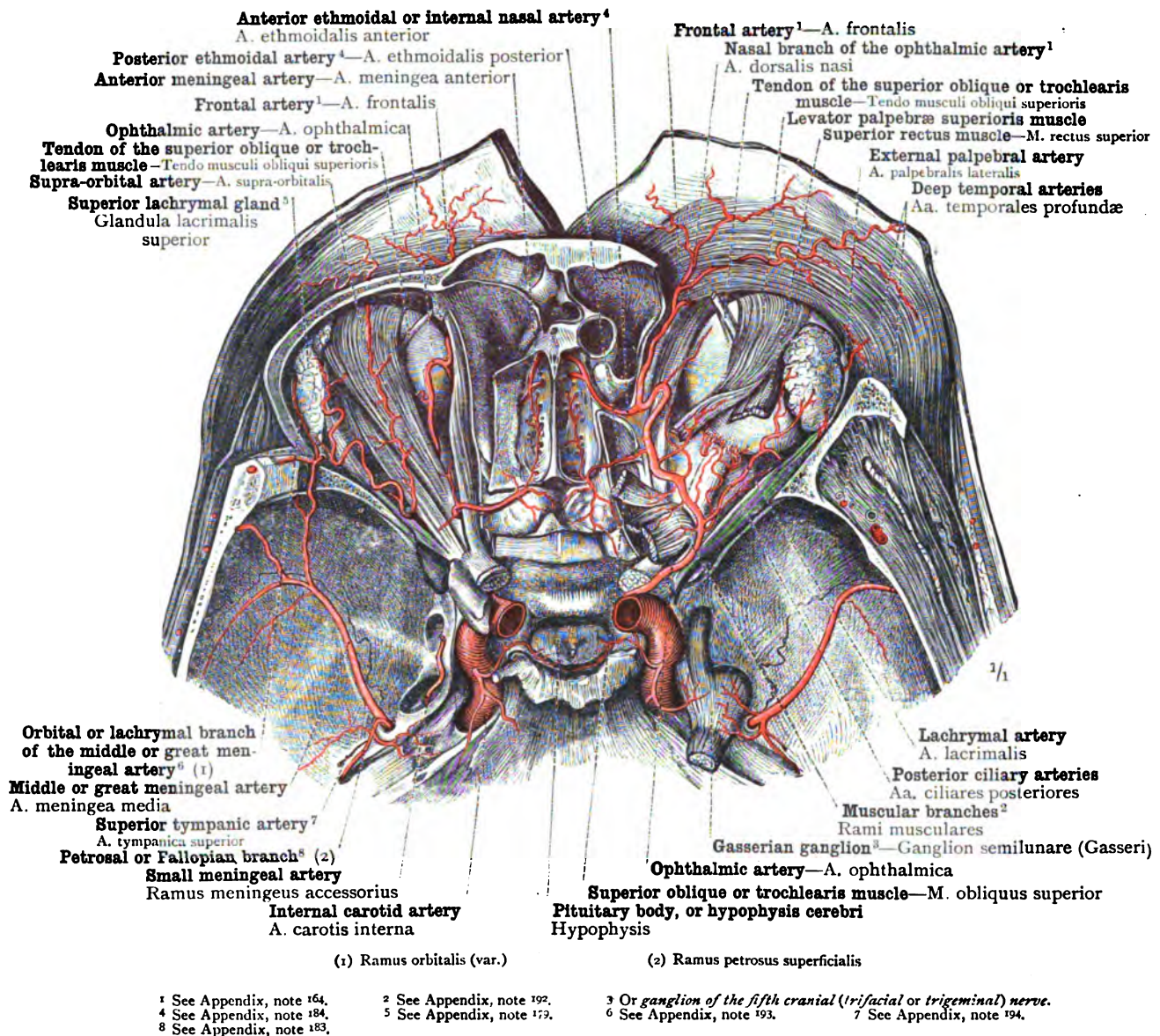
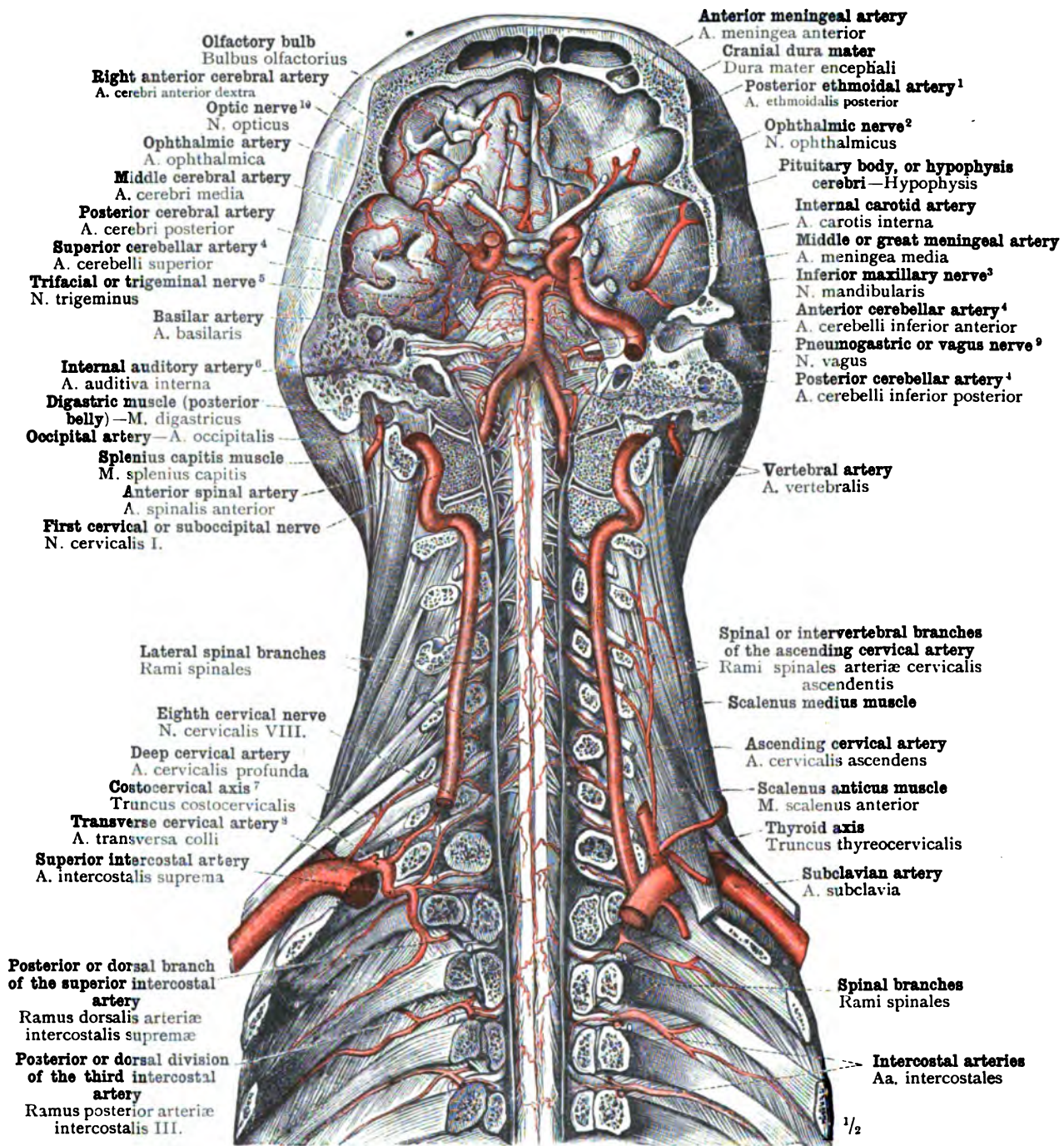


FIG. 1010.—THE THIRD, TERMINAL, OR INTRACRANIAL PORTION OF THE INTERNAL CAROTID ARTERY, ARTERIA CAROTIS INTERNA, AND THE DISTRIBUTION OF THE OPHTHALMIC ARTERY, ARTERIA OPHTHALMICA; SEEN FROM ABOVE. THE MIDDLE MENINGEAL ARTERY SENDS AN OFFSET TO THE LACHRYMAL GLAND THROUGH THE OUTER WALL OF THE ORBIT (A COMMON VARIETY—see Appendix, note 183). ON THE LEFT SIDE, THE POSTERIOR ETHMOIDAL ARTERY IS LARGER THAN THE ANTERIOR ETHMOIDAL, AND CROSSES ABOVE (INSTEAD OF BELOW) THE SUPERIOR OBLIQUE OR TROCHLEARIS MUSCLE (VAR.).

The roof of the right orbit, and the roof and the upper part of the outer wall of the left orbit, were removed. The scalp having been separated from the subjacent squamous portion of the frontal bone and turned forwards and a little downwards, the branches of the ophthalmic artery, arteria ophthalmica, emerging from beneath the orbital arch or supra-orbital margin, margo supra-orbitalis, were exposed: these branches are, the supra-orbital artery, arteria supra-orbitalis; the frontal artery, arteria frontalis; and the nasal branch, arteria dorsalis nasi (see Appendix, note 164). On the right side, the levator palpebræ superioris muscle, the superior rectus muscle, and the superior oblique or trochlearis muscle were in part removed, and their proximal segments were turned backwards, in order to expose the entire course of the ophthalmic artery, arteria ophthalmica, its offsets to the orbital muscles, rami musculares (see Appendix, note 192), and to the eyeball, and the origin of the ethmoidal arteries (see Appendix, note 184). The right anterior ethmoidal or internal nasal artery was laid bare from its origin up to its point of emergence from the cranial cavity; by the partial removal of the roof of the sphenoidal sinus, its mucoperiosteum being left intact, the ramification in the substance of this membrane of the branches of the posterior ethmoidal artery was displayed.

#### Arteries of the Orbit, and of the Anterior and Middle Cranial Fossæ.



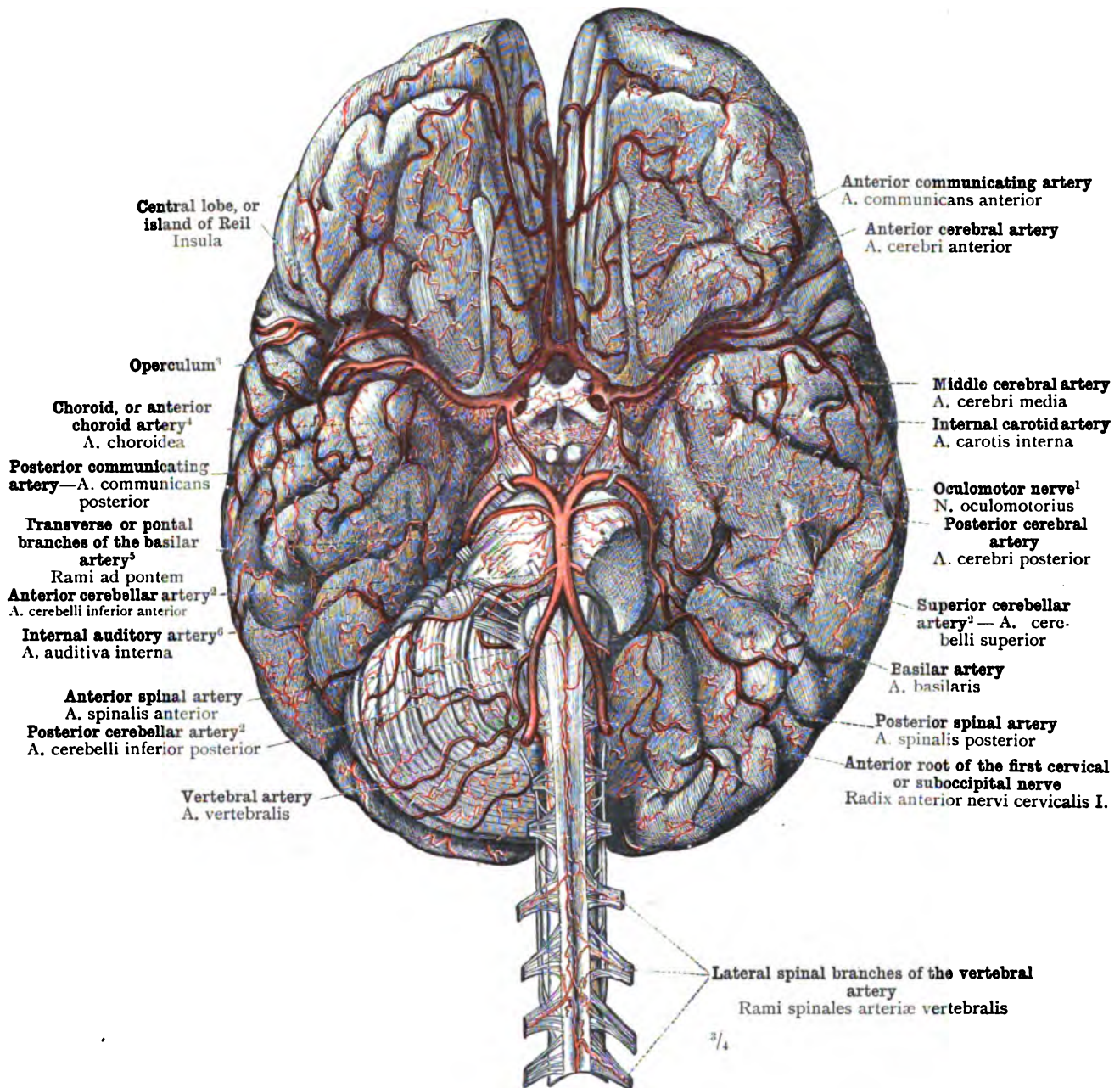


- <sup>1</sup> See Appendix, note 184. <sup>2</sup> Or first division of the fifth cranial (trifacial or trigeminal) nerve. <sup>3</sup> Or third division of the fifth cranial (trifacial or trigeminal) nerve. <sup>4</sup> See Appendix, note 195. <sup>5</sup> Or fifth cranial nerve.  
<sup>6</sup> Called by Quain the auditory artery without qualification. <sup>7</sup> See Appendix, note 177.  
<sup>8</sup> Or posterior scapular artery (Macalister); and see Appendix, note 172.  
<sup>9</sup> Or tenth cranial nerve, according to Soemmering's enumeration. (According to that of Willis, the *par vagum* of the eighth cranial nerve.)—Tr.  
<sup>10</sup> Or second cranial nerve.

FIG. 1011.—IN THE THORAX, THE BODIES OF THE VERTEBRÆ WITH THE HEADS OF THE RIBS HAVE BEEN REMOVED; IN THE NECK, THE BODIES OF THE VERTEBRÆ AND THE ANTERIOR LIMBS OF THE TRANSVERSE PROCESSES (*i.e.*, THE COSTAL PROCESSES), SO AS TO EXPOSE THE VERTEBRAL ARTERY, AND, AFTER CUTTING AWAY THE ANTERIOR PORTION OF THE SPINAL DURA MATER, THE SPINAL BRANCHES OF THE VERTEBRAL ARTERY AND THE SPINAL OR INTERVERTEBRAL BRANCHES OF THE ASCENDING CERVICAL ARTERY. IN THE HEAD, THE GREATER PART OF THE BASE OF THE SKULL HAS BEEN CUT AWAY, AND ON THE RIGHT SIDE THE EXPOSED PORTION OF THE CRANIAL DURA MATER HAS ALSO BEEN REMOVED, SO AS TO LAY BARE THE ARTERIES OF THE BASE OF THE BRAIN. SEEN FROM BEFORE. THE INTERNAL AUDITORY ARTERY, ARTERIA AUDITIVA INTERNA (see note <sup>6</sup> above), ARISES IN THIS SPECIMEN FROM THE ANTERIOR CEREBELLAR ARTERY, ARTERIA CEREBELLI INFERIOR ANTERIOR (see Appendix, note <sup>195</sup>), INSTEAD OF, AS NORMALLY, DIRECTLY FROM THE BASILAR ARTERY. THIS IS A COMMON VARIETY.

A. vertebralis, the vertebral artery. A. basilaris, the basilar artery. A. carotis interna, the internal carotid artery.





<sup>1</sup> Or *third cranial nerve*. Sometimes distinguished from the *fourth* and the *sixth cranial nerves* as the *common oculomotor nerve*, and often spoken of as the *motor oculi nerve*.

<sup>2</sup> See Appendix, note 195.

<sup>3</sup> See Appendix, note 196.

<sup>4</sup> Distinguished as *anterior choroid artery* from the *posterior choroid branch* of the *posterior cerebral artery*, which is not mentioned by the author.—Tx.

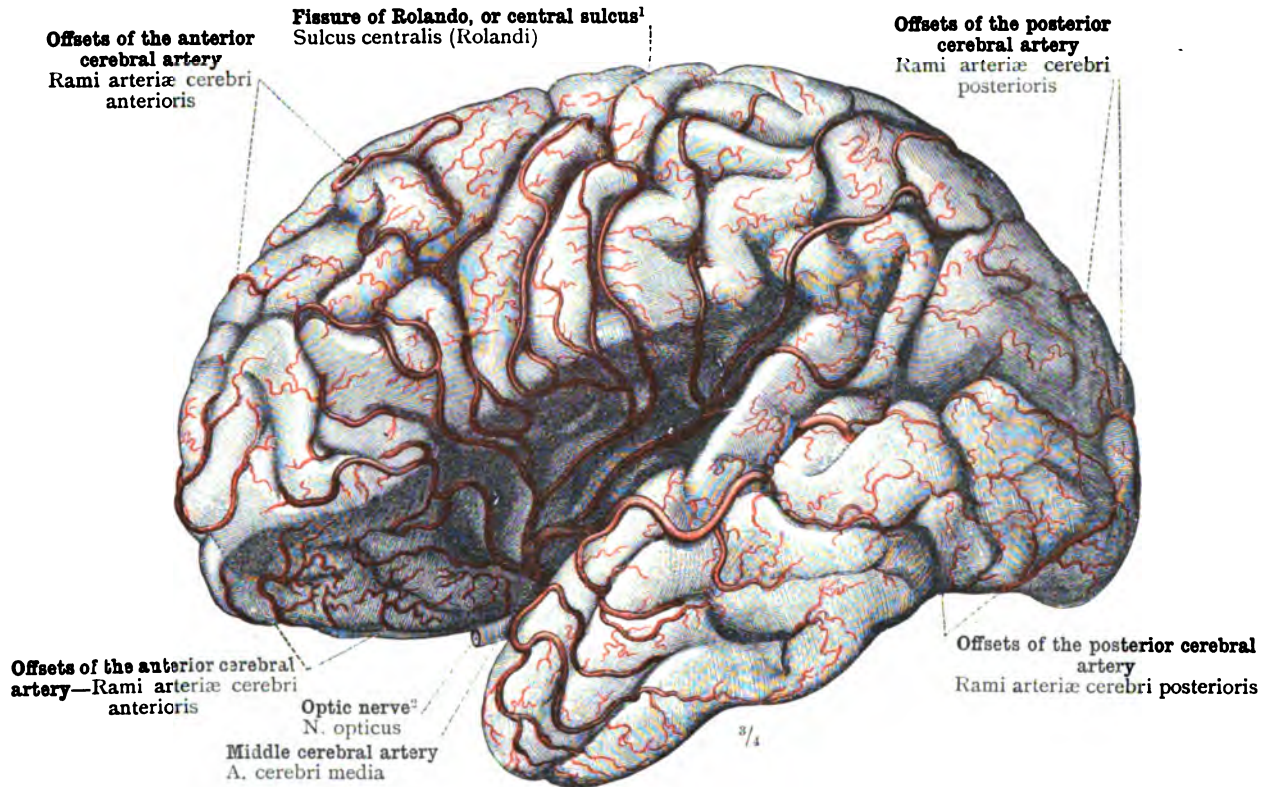
<sup>5</sup> Or *transverse arteries of the pons* (Ellis, "Demonstrations of Anatomy").

<sup>6</sup> Called by Quain the *auditory artery* without qualification.

FIG. 1012.—THE ARTERIES OF THE BASE OF THE BRAIN; THE CIRCLE OF WILLIS, CIRCULUS ARTERIOSUS (WILLIS).

The frontal lobes were drawn a little apart, in order to display the two anterior cerebral arteries as far as the genu of the corpus callosum; the right fissure of Sylvius, *fissura cerebri lateralis dextra*, was opened up to some extent, in order to trace the ramification of the middle cerebral artery. After the removal of the left hemisphere of the cerebellum, the ramification of the posterior cerebral artery on the basal (inferior) surface of the temporal and occipital lobes was exposed.

Arteries of the Brain.



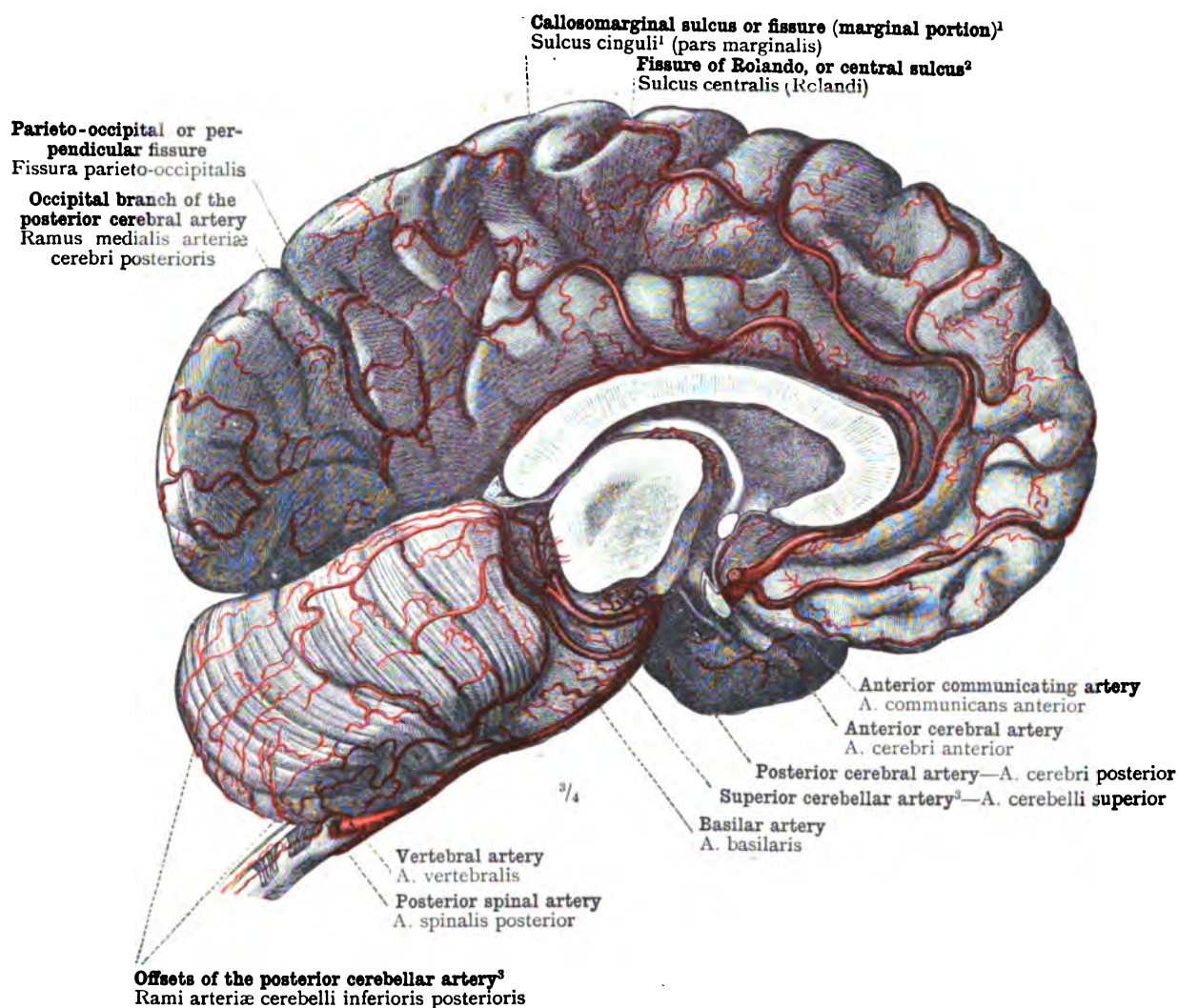
<sup>1</sup> *Fissure of Rolando*.—If the use of the term *fissure* be restricted, according to the usage of some authorities, to those sulci that involve the whole thickness both of the grey and the white substance of the cerebrum, and thus affect the form of the lateral ventricle or give rise to eminences projecting on its wall, the *central sulcus* does not come within that category. It is, on the other hand, one of the *primary sulci*, one of those that are already apparent in the sixth month of intra-uterine life; and, moreover, it is an *interlobar sulcus*, constituting the boundary on the outer surface of the hemisphere between the frontal and the parietal lobes. Hence it is usually distinguished by the title of *fissure*, and is seldom spoken of as the *furrow of Rolando*.—Tr.

<sup>2</sup> Or *second cranial nerve*.

FIG. 1013.—THE RAMIFICATION OF THE CEREBRAL ARTERIES, ARTERIÆ CEREBRI, ON THE CONVEX (OUTER) SURFACE OF THE LEFT CEREBRAL HEMISPHERE AND THE CENTRAL LOBE OR ISLAND OF REIL, AND ALSO ON THE BASAL (INFERIOR) SURFACE OF THE FRONTAL LOBE. THE LEFT HEMISPHERE OF THE CEREBRUM, SEEN FROM THE OUTER SIDE.

The fissure of Sylvius, *fissura cerebri lateralis* (Sylvii), was widely opened by the separation of the adjoining lobes of the cerebral hemisphere, in order to display the ramification of the middle cerebral artery, *arteria cerebri media*, at the bottom of the fissure.





<sup>1</sup> *Sulcus Cinguli*.—This term is not used by English anatomists. The *callosal convolution*, *gyrus fornicatus*, is in England sometimes termed *gyrus cinguli*, and this latter name is used by the author to distinguish what he calls the "upper portion of the *gyrus fornicatus*," the convolution on the inner (mesial) surface of the hemisphere immediately above the corpus callosum or great commissure. The *gyrus cinguli* is bounded above by the *sulcus cinguli*, the *callosomarginal sulcus* of English authors; and this is divided by Toldt into a *pars marginalis* and a *pars subfrontalis*, *marginal* and *subfrontal* portions, the terms being self-explanatory. The posterior portion was called by Wilder the *paracentral fissure*; the anterior portion, which is parallel with the genu of the corpus callosum, the *prelimbic fissure*.—T.K.

<sup>2</sup> See note <sup>1</sup> to p. 624.

<sup>3</sup> See Appendix, note <sup>195</sup>.

FIG. 1014.—THE DISTRIBUTION OF THE ANTERIOR AND POSTERIOR CEREBRAL ARTERIES, ARTERIÆ CEREBRI ANTERIOR ET POSTERIOR, ON THE INTERNAL (MESIAL) SURFACE OF THE LEFT HEMISPHERE OF THE CEREBRUM; AND ALSO THE RAMIFICATION OF THE SUPERIOR AND POSTERIOR CEREBELLAR ARTERIES, ARTERIÆ CEREBELLI SUPERIOR ET INFERIOR POSTERIOR (see Appendix, note <sup>195</sup>), ON THE UPPER SURFACE OF THE RIGHT HEMISPHERE OF THE CEREBELLUM. THE POSTERIOR SPINAL ARTERY, ARTERIA SPINALIS POSTERIOR; THE VERTEBRAL ARTERY, ARTERIA VERTEBRALIS; AND THE BASILAR ARTERY, ARTERIA BASILARIS.

The corpus callosum or great commissure having been divided longitudinally in the median plane, the right hemisphere of the cerebrum was removed by a section passing through its peduncle (the right crus cerebri), in order to display the course and distribution of the anterior and posterior cerebral arteries, arteriæ cerebri anterior et posterior, and also to expose the branches of the posterior cerebral artery that enter the isthmus of the brain as well as those passing to the velum interpositum or tela choroidea superior (tela choroidea ventriculi tertii).

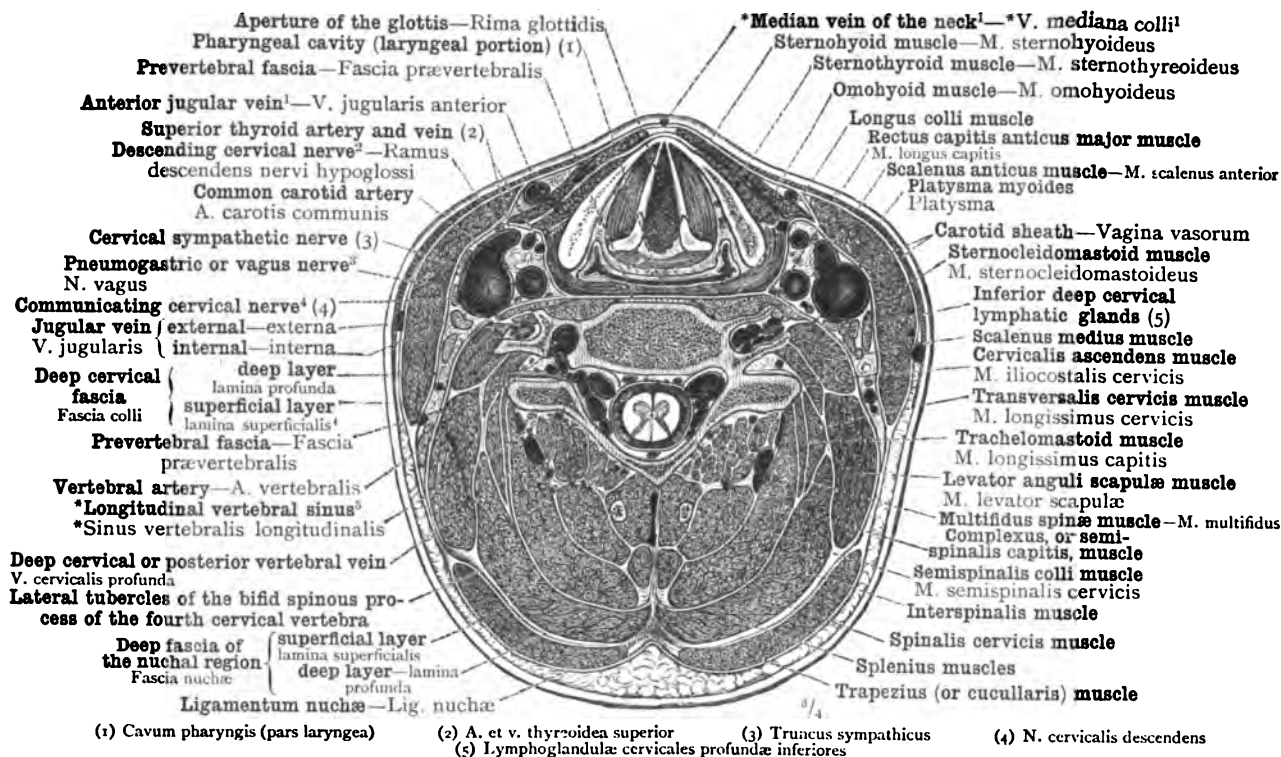


FIG. 1015.—TRANSVERSE SECTION THROUGH THE NECK, AT THE LEVEL OF THE APERTURE OF THE GLOTTIS, AND PASSING THROUGH THE BODY OF THE FIFTH CERVICAL VERTEBRA; UPPER SURFACE OF THE LOWER SEGMENT.

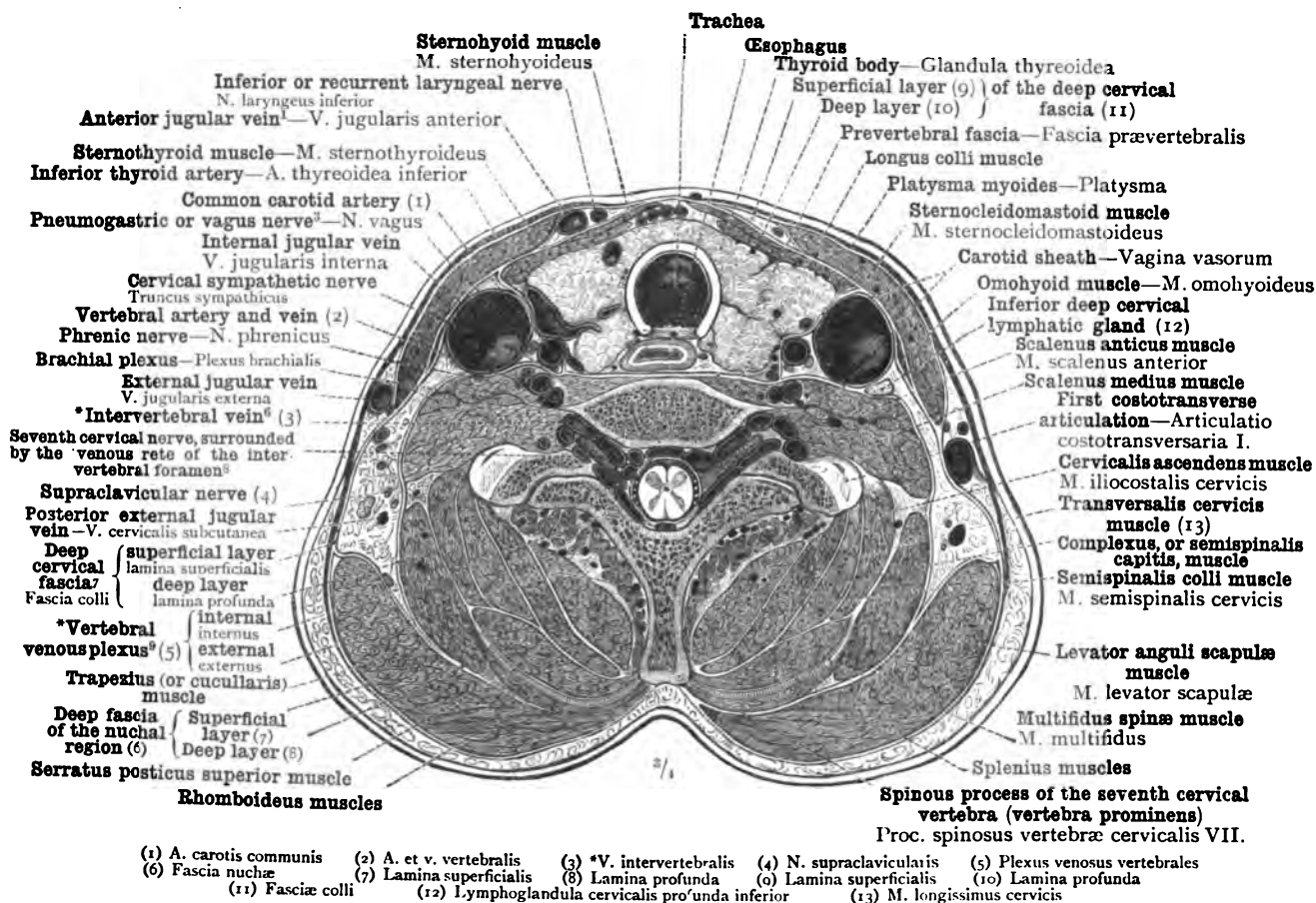


FIG. 1016.—TRANSVERSE SECTION THROUGH THE NECK, PASSING THROUGH THE SPINE NEAR THE LOWER SURFACE OF THE BODY OF THE SEVENTH CERVICAL VERTEBRA (VERTEBRA PROMINENS). UPPER SURFACE OF THE LOWER SEGMENT.

<sup>1</sup> See Appendix, note 197.

<sup>2</sup> See Appendix, note 198.

<sup>3</sup> Or tenth cranial nerve, according to Soemmerring's enumeration. (According to that of Willis, the *par vagum* of the eighth cranial nerve.)—Tr.

<sup>4</sup> See Appendix, note 199.

<sup>5</sup> See Appendix, note 200.

<sup>6</sup> See Appendix, note 201.

<sup>7</sup> See Appendix, note 202.

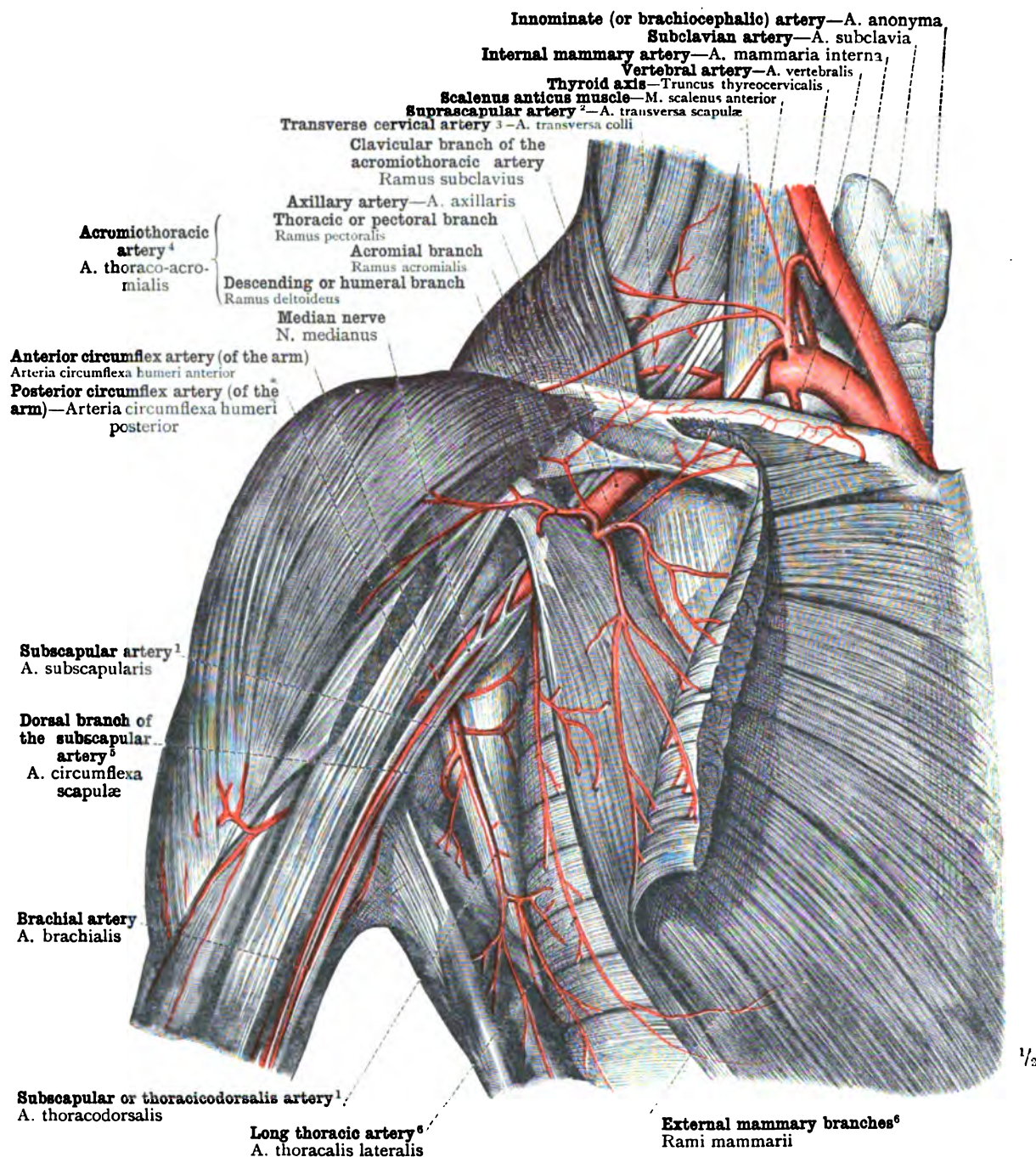
<sup>8</sup> See note 5 to p. 667.

<sup>9</sup> See note 1 to p. 665.



ARTERIÆ EXTREMITATUM  
SUPERIORUM ET INFERIORUM

THE ARTERIES OF THE  
UPPER AND LOWER EXTREMITIES



- <sup>1</sup> See Appendix, note <sup>203</sup>. <sup>2</sup> Known also as the *transverse scapular* or *transverse humeral* artery.  
<sup>3</sup> Or *posterior scapular* artery (Macalister). See Appendix, notes <sup>134</sup>, <sup>135</sup>, <sup>172</sup>, and <sup>208</sup>.  
<sup>4</sup> Called by Macalister the *thoraco-acromial* artery.  
<sup>5</sup> Often called the *dorsalis scapulae* artery. See also Appendix, note <sup>203</sup>. <sup>6</sup> See Appendix, note <sup>204</sup>.

FIG. 1017.—RIGHT SUBCLAVIAN AND AXILLARY ARTERIES AND THEIR RELATION TO THE BRACHIAL PLEXUS; SEEN FROM THE FRONT AND THE INNER SIDE. THE DIVISION OF THE INNOMINATE (OR BRACHIOCEPHALIC) ARTERY INTO RIGHT SUBCLAVIAN AND COMMON CAROTID ARTERIES. \*THORACIC PORTION OF THE SUBCLAVIAN ARTERY (see Appendix, note <sup>205</sup>), WITH THE ORIGIN OF THE VERTEBRAL ARTERY, THE THYROID AXIS, AND THE INTERNAL MAMMARY ARTERY; THE CERVICAL (THIRD) PORTION OF THE SUBCLAVIAN ARTERY (see Appendix, note <sup>205</sup>), WITH THE ORIGIN OF THE TRANSVERSE CERVICAL ARTERY.

Of the branches of the axillary artery (see Appendix, note <sup>206</sup>) we see: the branches of the acromiothoracic artery, arteria thoraco-acromialis, the thoracic or pectoral branch, ramus pectoralis, the clavicular branch, ramus subclavius, the acromial branch, ramus acromialis, and the descending or humeral branch, ramus deltoideus; the long thoracic artery, arteria thoracalis lateralis; the (long) subscapular artery, arteria subscapularis, and its division into the dorsal scapular artery, arteria circumflexa scapulae, and the thoracodorsalis artery, arteria thoracodorsalis (see Appendix, note <sup>203</sup>); the anterior and posterior circumflex arteries (of the arm), arteriæ circumflexæ humeri, anterior et posterior.

A. subclavia, the subclavian artery; A. axillaris, the axillary artery.



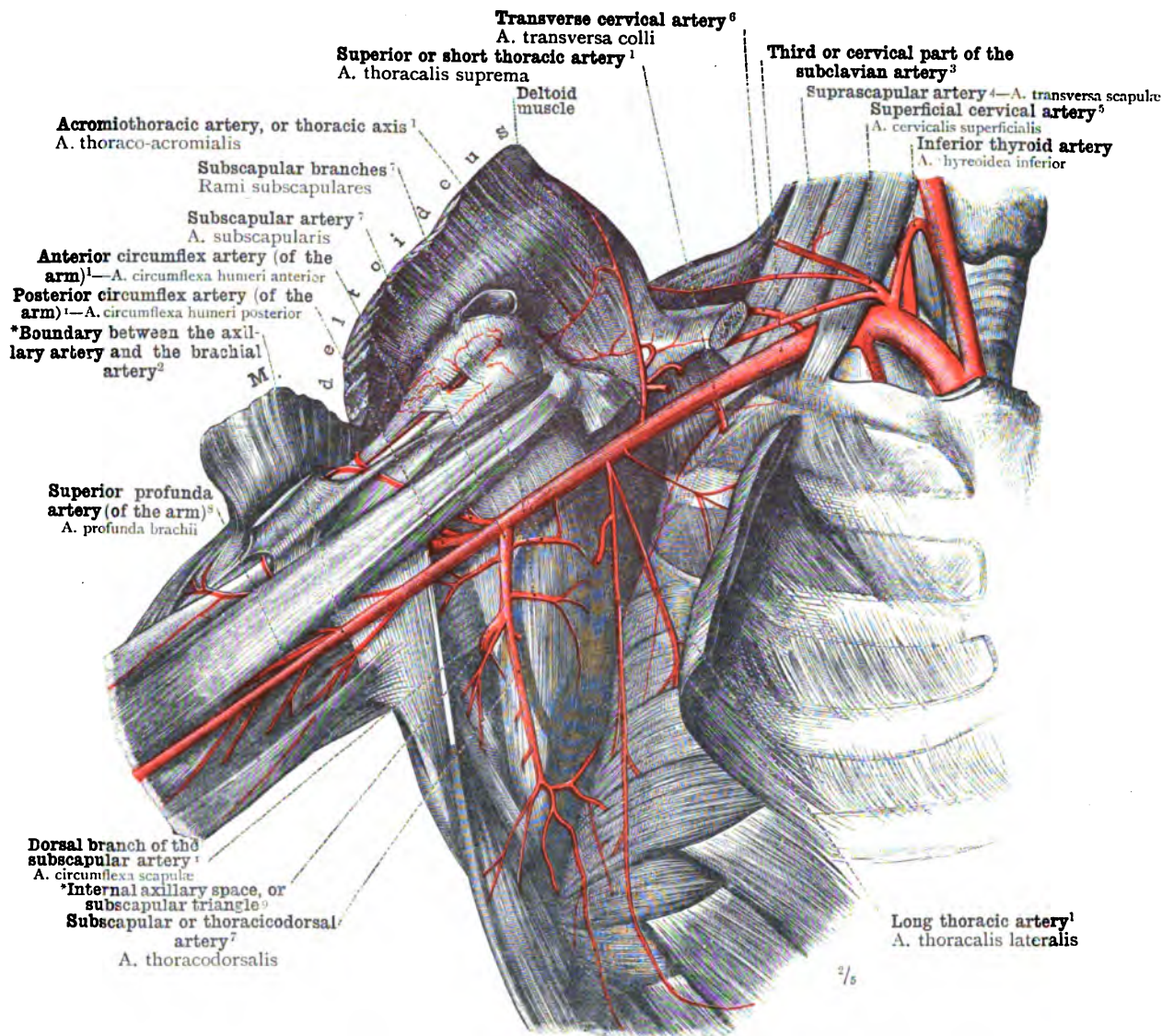
<sup>1</sup> See Appendix, note 206.<sup>2</sup> See Appendix, note 207.<sup>3</sup> See Appendix, note 205.<sup>4</sup> Known also as the *transverse scapular* or *transverse humeral* artery.<sup>5</sup> See Appendix, note 208.<sup>6</sup> See Appendix, notes 134, 135, 172, and 208.<sup>7</sup> See Appendix, notes 203 and 206.<sup>8</sup> See Appendix, note 209.<sup>9</sup> See Part III. of this work, p. 312, Fig. 559, and note <sup>1</sup> to same page.

FIG. 1018.—THE DISTRIBUTION OF THE BRANCHES OF THE AXILLARY ARTERY AS SEEN AFTER THE ANTERIOR WALL OF THE AXILLA AND THE BRACHIAL PLEXUS HAVE BEEN ENTIRELY REMOVED; SEEN FROM THE FRONT AND THE INNER SIDE. THE SUPERIOR OR SHORT THORACIC ARTERY, ARTERIA THORACICA SUPREMA; THE LONG THORACIC ARTERY, ARTERIA THORACALIS LATERALIS; THE ACROMIOTHORACIC ARTERY, OR THORACIC AXIS, ARTERIA THORACO-ACROMIALIS; THE SUBSCAPULAR ARTERY, ARTERIA SUBSCAPULARIS, GIVING OFFSETS TO THE SUBSCAPULARIS MUSCLE, RAMI SUBSCAPULARES, AND DIVIDING (see Appendix, notes 203 and 206) INTO THE ARTERIA THORACODORSALIS (CONTINUATION OF THE SUBSCAPULAR ARTERY, OR THORACICODORSAL ARTERY) AND THE ARTERIA CIRCUMFLEXA SCAPULÆ (DORSAL BRANCH OF THE SUBSCAPULAR ARTERY, OR DORSALIS SCAPULÆ ARTERY); THE ANTERIOR AND POSTERIOR CIRCUMFLEX ARTERIES (OF THE ARM), ARTERIÆ CIRCUMFLEXÆ HUMERI ANTERIOR ET POSTERIOR.

In the preparation shown in Fig. 1017, the sternal extremity of the clavicle and the pectoralis major muscle were removed; the pectoralis minor muscle was cut across, its inner segment being turned towards the median line, and the brachial plexus was removed. The arm was abducted, a transverse incision was made into the anterior border of the deltoid muscle, and this muscle was turned outwards, in order to display the course of the anterior circumflex artery (of the arm) and its anterior articular branch. Regarding the branches of the axillary artery, see Appendix, note 206; and regarding the parts of the axillary artery, see Appendix, note 207.

A. subclavia, the subclavian artery; A. axillaris, the axillary artery.



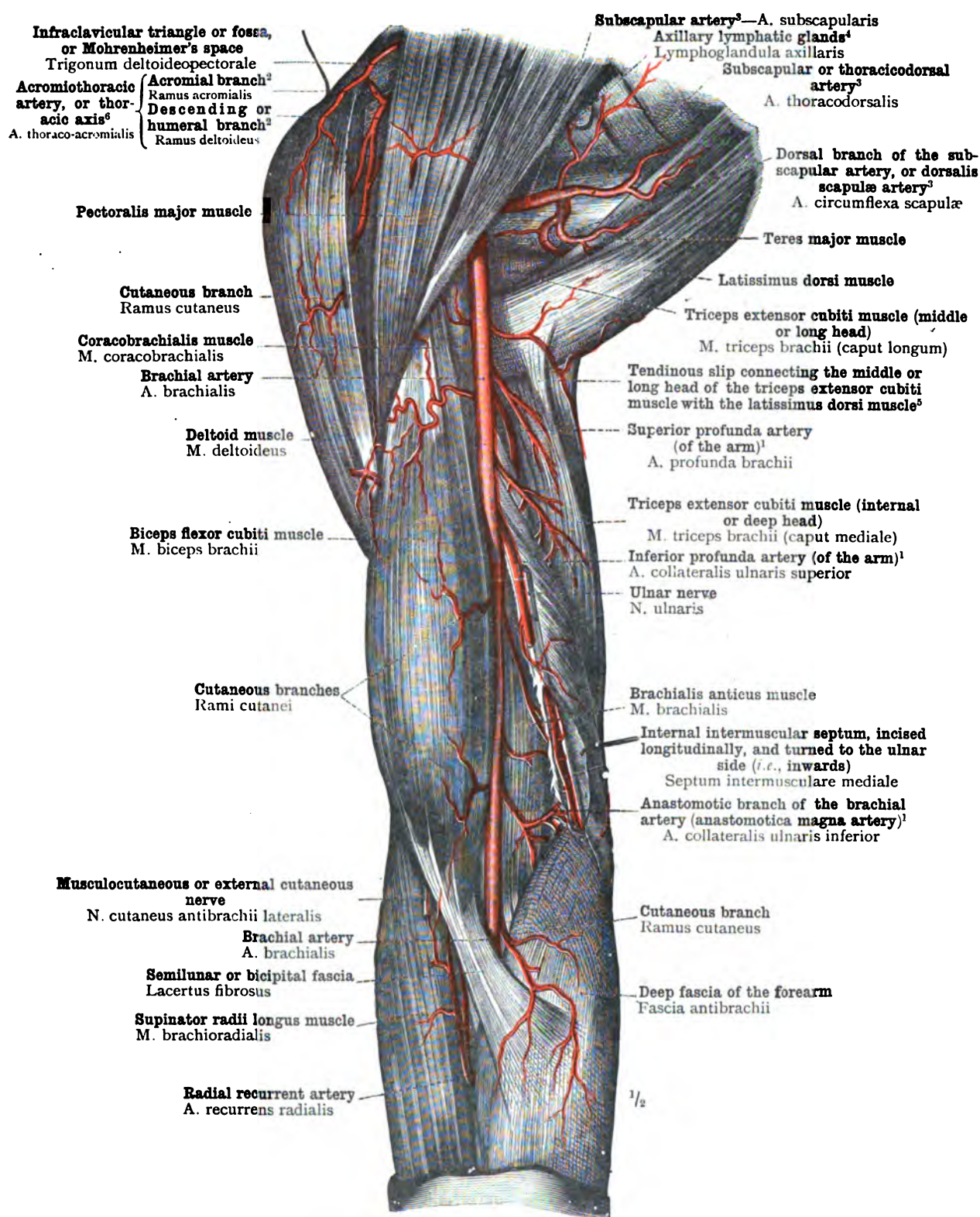
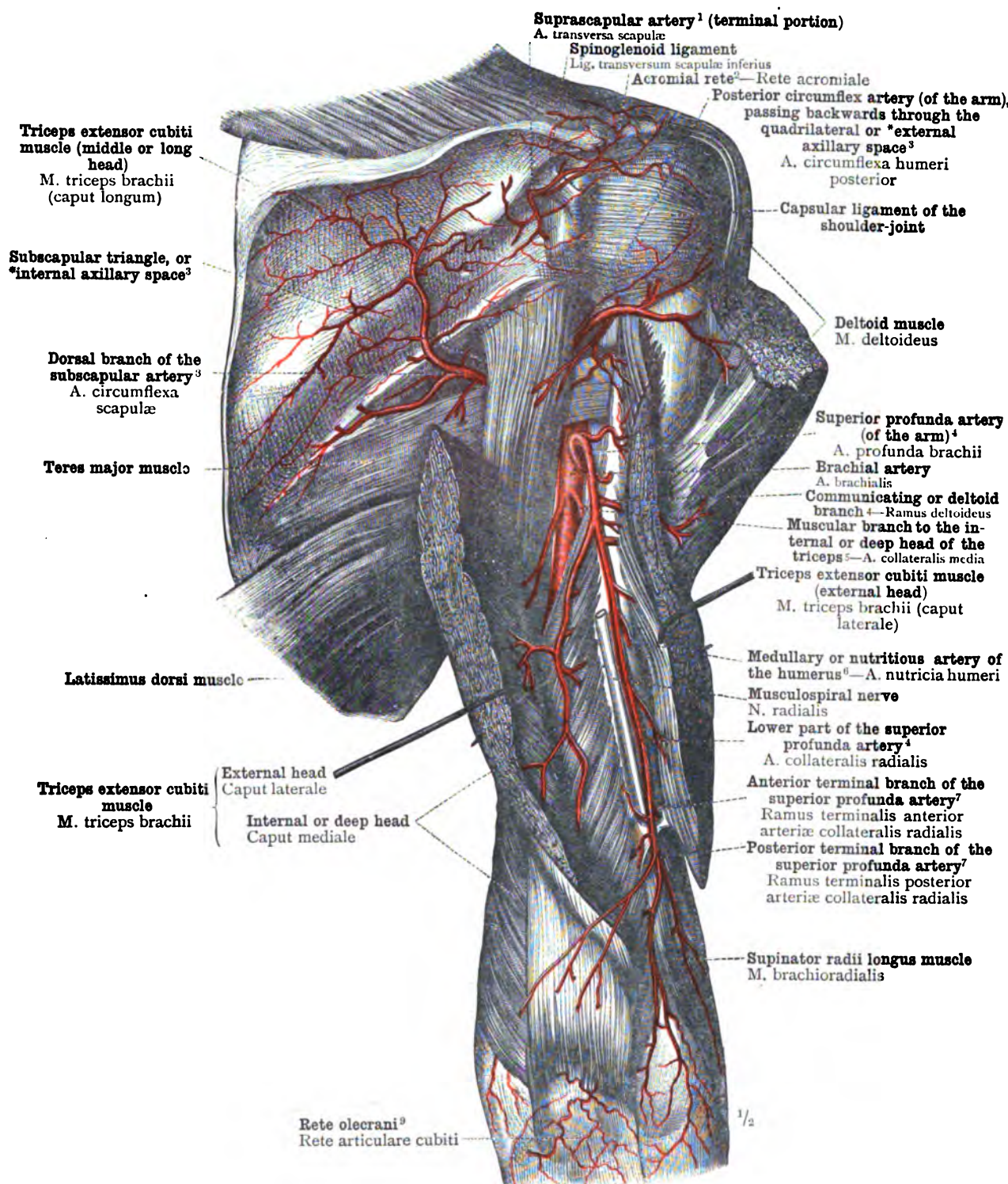
<sup>1</sup> See Appendix, note 209.<sup>2</sup> See Appendix, note 206.<sup>3</sup> See Appendix, notes 203 and 206.<sup>4</sup> This, being one of the glands lying on the serratus magnus muscle at the lower border of the pectoral muscles, belongs to the *pectoral* group of *axillary* lymphatic glands (Quain).—Tr.<sup>5</sup> This slip is vestigial in nature, representing the *dorso-epitrochlearis* or *accessorius tricipitis* muscle which is commonly met with in quadrumana, and exists in many other mammals. (See Quain, *op. cit.*, vol. ii., pp. 206 and 221, and Macalister, *op. cit.*, p. 290.)—Tr.<sup>6</sup> Called by Macalister the *thoraco-acromial* artery. See Appendix, note 206.

FIG. 1019.—THE ARTERIES OF THE RIGHT UPPER ARM, SHOULDER, AND AXILLARY REGION; SEEN FROM THE FRONT AND THE INNER SIDE.

Regarding the branches of the brachial artery, see Appendix, note 209; and regarding the upper limit of the brachial artery, see Appendix, note 210.

### The Arteries of the Upper Arm and the Shoulder.





<sup>1</sup> Known also as the *transverse scapular* or *transverse humeral* artery.

<sup>3</sup> See note <sup>1</sup> to p. 312 in Part III.

<sup>5</sup> Arising in this instance direct from the brachial artery, instead of, as normally, from the superior profunda artery. See Appendix, note 209.

<sup>6</sup> This is the *medullary* or *nutritious* branch of the superior profunda artery, not the *chief medullary artery* of the humerus, which enters a foramen somewhat lower down in the shaft of the humerus. See Appendix, note 209.

<sup>7</sup> See Appendix, note 211.

<sup>8</sup> See Appendix, notes 203 and 206.

<sup>2</sup> See Appendix, note 170.

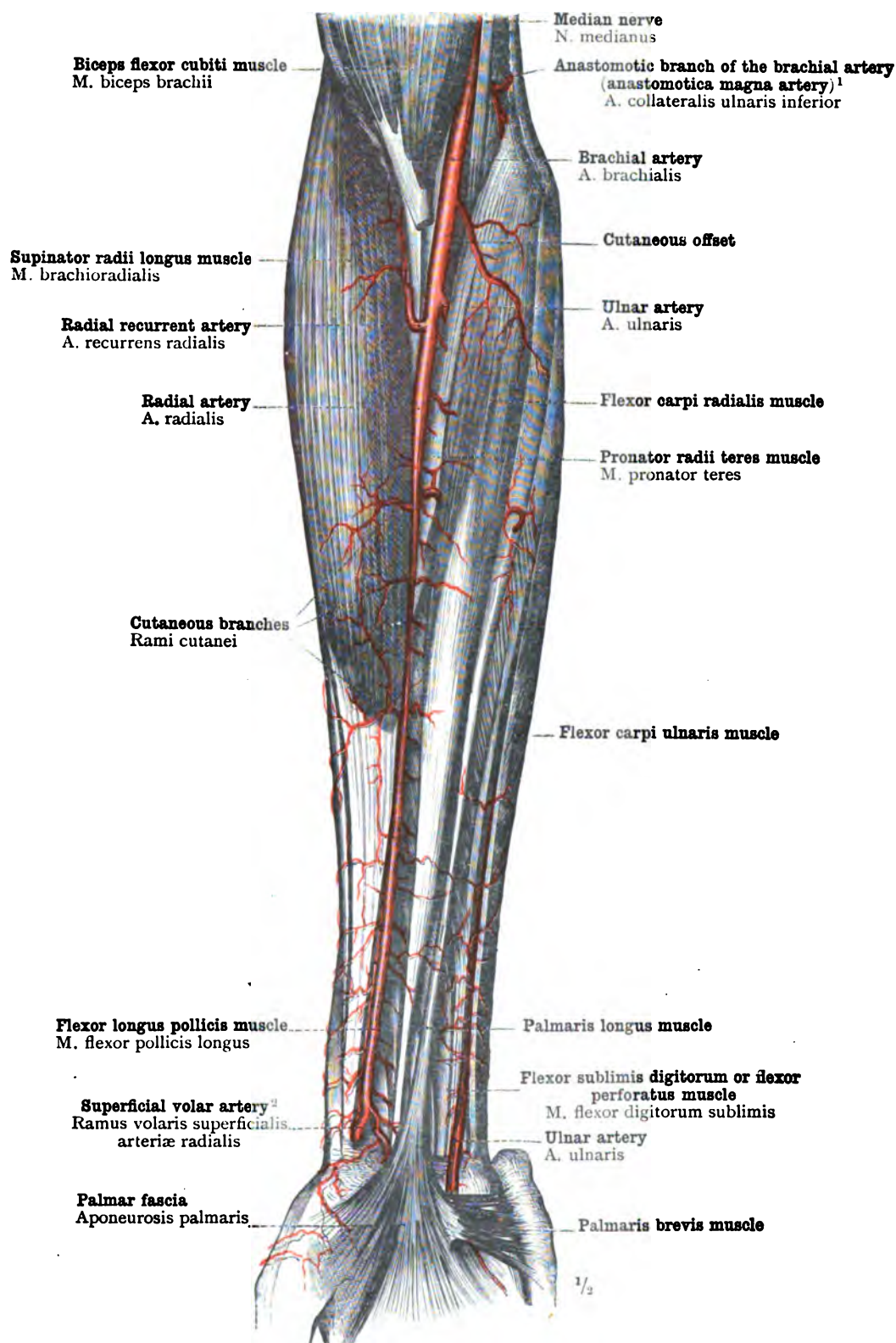
<sup>4</sup> See Appendix, note 209.

<sup>9</sup> See Appendix, note 22.

FIG. 1020.—THE DEEP ARTERIES AT THE BACK OF THE RIGHT UPPER ARM AND THE RIGHT SHOULDER; THE ARTERIAL NETWORK OF THE ELBOW, RETE OLECRANI OR RETE ARTICULARE CUBITI (see Appendix, note 213).

The posterior part of the deltoid muscle was removed, in addition to the infraspinatus and teres minor muscles, and the external head of the triceps extensor cubiti muscle was divided by a longitudinal incision, the parts being widely separated.

### Arteries of the Upper Arm and the Shoulder.



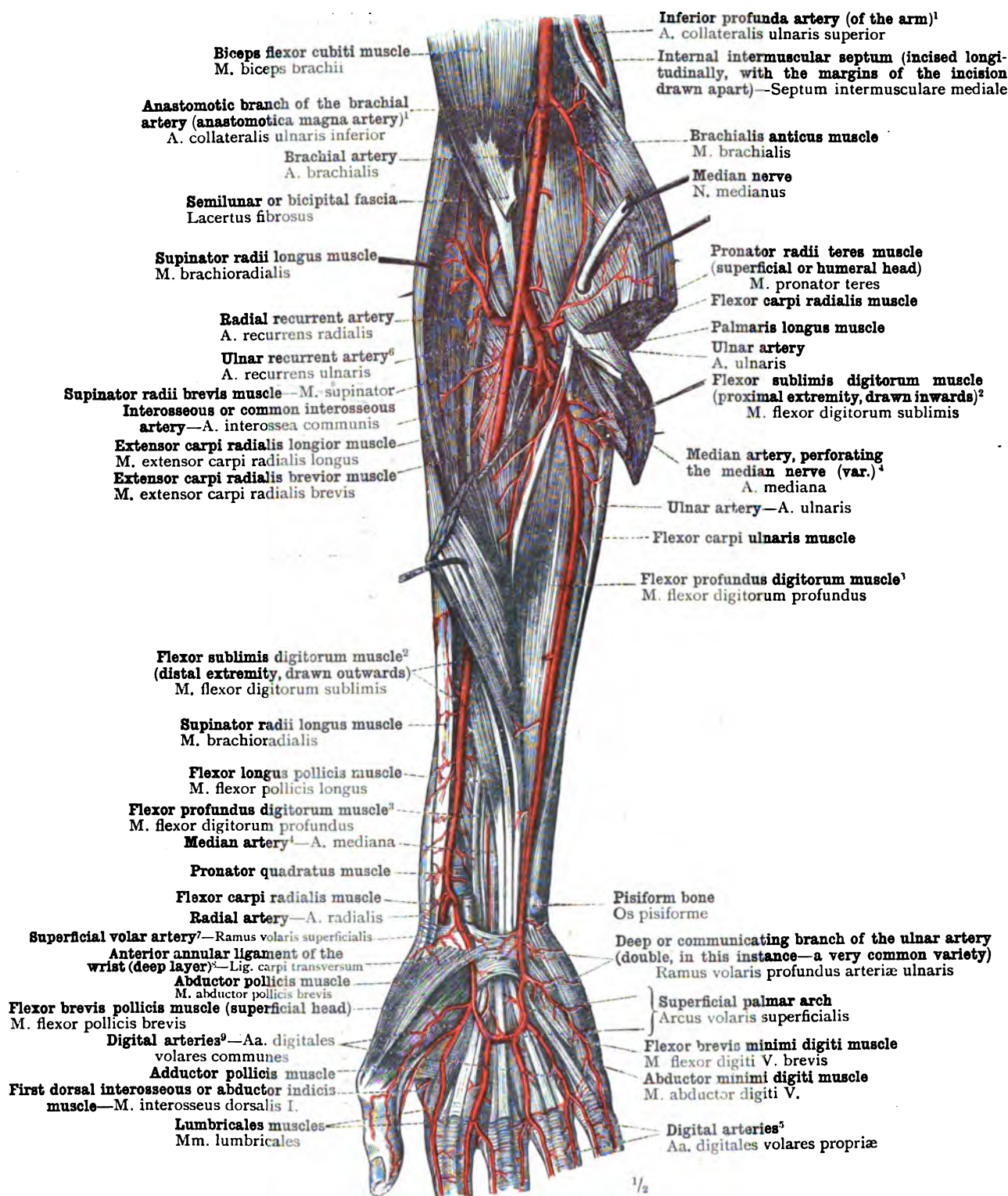
<sup>1</sup> See Appendix, note 202.

<sup>2</sup> Often known in England by the Latin name of *superficialis volæ artery*.—Tr.

FIG. 1021.—THE SUPERFICIAL ARTERIES OF THE ANTECUBITAL FOSSA AND THE PALMAR SURFACE OF THE RIGHT FOREARM.

### Palmar Arteries of the Forearm and the Hand.





<sup>1</sup> See Appendix, note 209.  
<sup>2</sup> Or *flexor perforatus* muscle.  
<sup>3</sup> Or *flexor perforans* muscle.  
<sup>4</sup> *Median Artery*.—Called by Macalister *comes nervi mediani* artery.  
<sup>5</sup> Or *collateral digital arteries*, see Appendix, note 213.  
<sup>6</sup> The *anterior ulnar recurrent artery* and the *posterior ulnar recurrent artery* are here seen arising by a common stem. This variety is of frequent occurrence.—Tr.  
<sup>7</sup> See note <sup>2</sup> to p. 632.  
<sup>8</sup> See Appendix, note 214.  
<sup>9</sup> See Appendix, note 213.

FIG. 1022.—THE RADIAL AND ULNAR ARTERIES AND THE SUPERFICIAL PALMAR ARCH.  
 The unusually large median artery (comes nervi mediani artery) perforates in this specimen the median nerve.

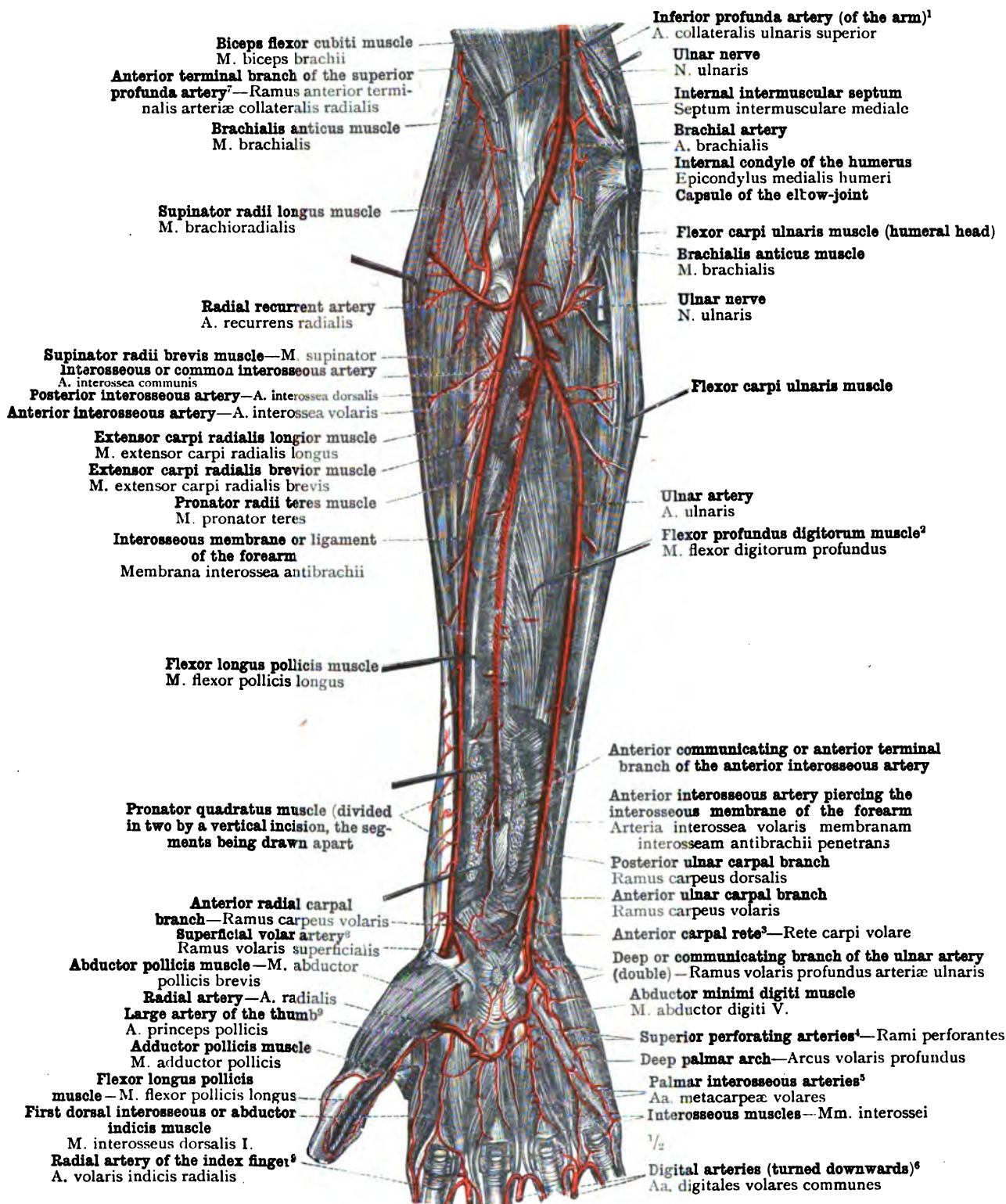
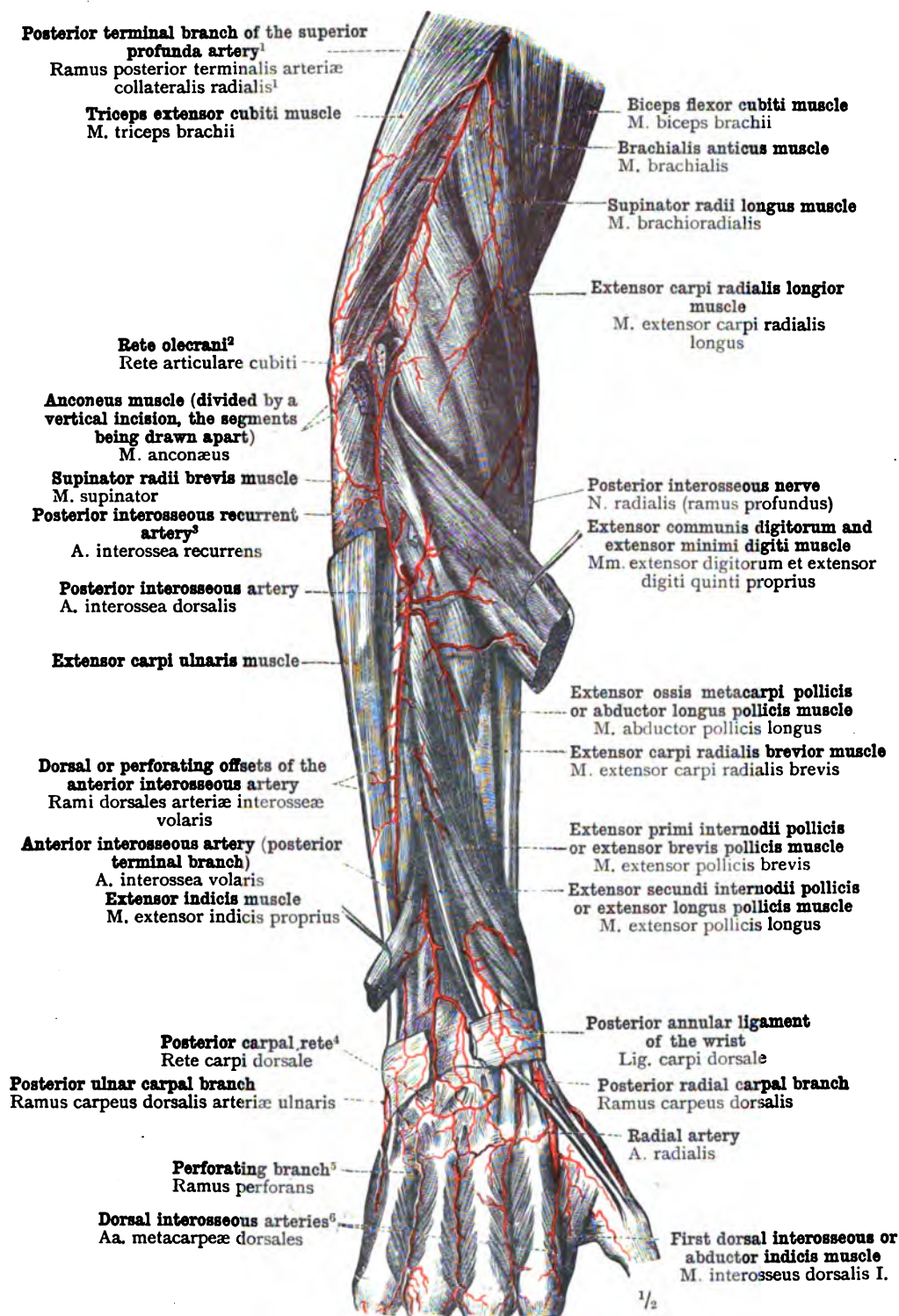
<sup>1</sup> See Appendix, note 209.<sup>2</sup> Or *flexor perforans* muscle.<sup>3</sup> See Appendix, note 215.<sup>4</sup> See Appendix, note 216.<sup>5</sup> Called by Macalister the descending digital branches of the deep palmar arch.<sup>6</sup> See Appendix, note 213.<sup>7</sup> See Appendix, note 217.<sup>8</sup> See note 2 to p. 632.<sup>9</sup> See Appendix, note 218.

FIG. 1023.—THE ANTERIOR INTEROSSEOUS ARTERY OF THE RIGHT FOREARM AND THE DEEP PALMAR ARCH; SEEN FROM BEFORE.

### Palmar Arteries of the Forearm and Hand.





<sup>1</sup> See Appendix, note 217.

<sup>3</sup> Often called the *interossea recurrent* artery without further qualification, as the anterior interosseous artery gives no recurrent branch.—Tr.

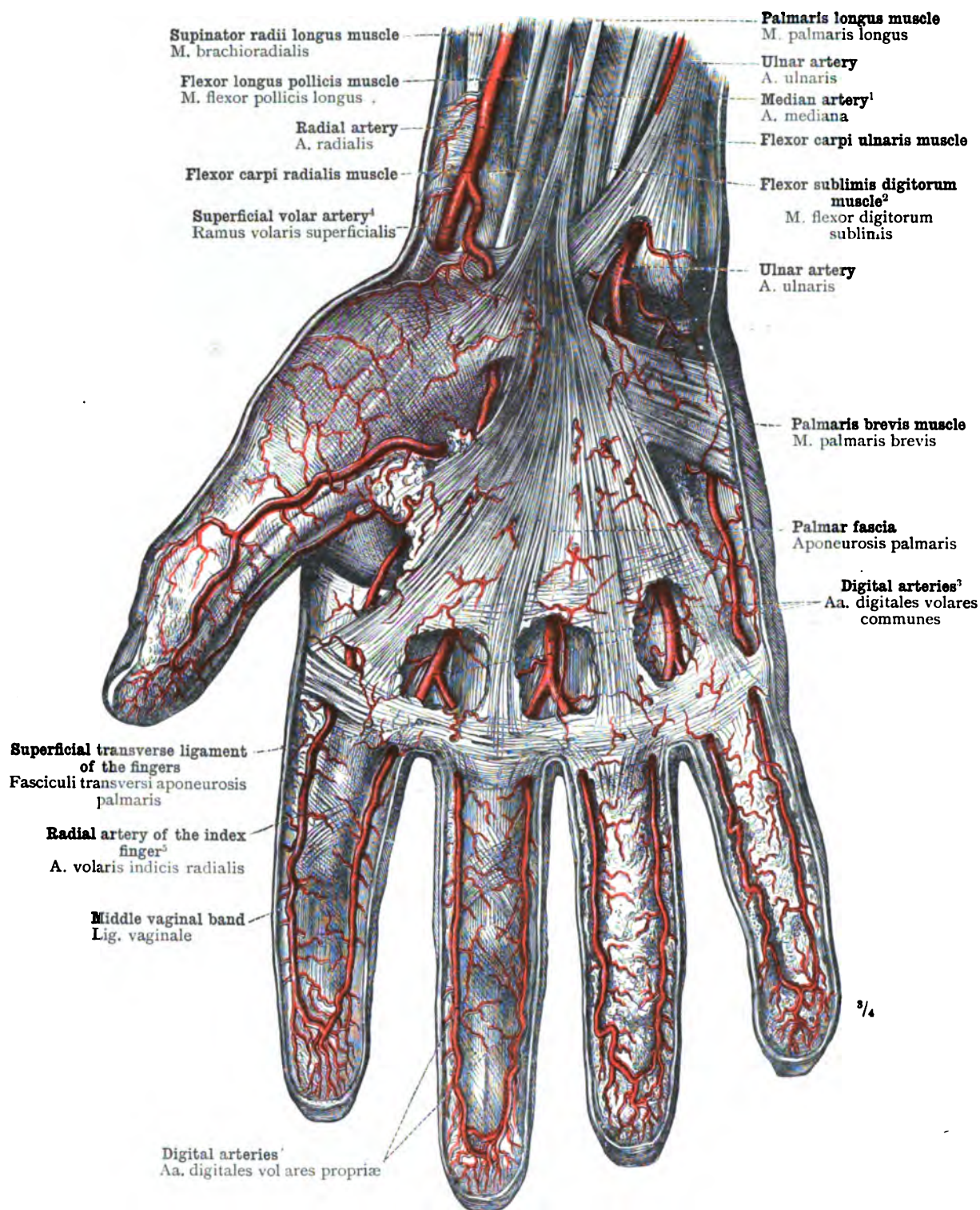
<sup>4</sup> See Appendix, note 20.

<sup>2</sup> See Appendix, note 212.

<sup>5</sup> See Appendix, note 216.

<sup>6</sup> See Appendix, note 220.

FIG. 1024.—ARTERIÆ INTEROSSEA DORSALIS ET INTEROSSEA RECURRENS, THE POSTERIOR INTEROSSEOUS AND POSTERIOR INTEROSSEOUS RECURRENT ARTERIES; THE POSTERIOR OR POSTERIOR TERMINAL BRANCH OF THE ANTERIOR INTEROSSEOUS ARTERY, ARTERIA INTEROSSEA VOLARIS; THE DEEP ARTERIES OF THE DORSUM OF THE HAND



<sup>1</sup> Called by Macalister *comes nervi mediani artery*.

<sup>4</sup> See note <sup>2</sup> to p. 632.

<sup>2</sup> Or *flexor perforatus* muscle.

<sup>5</sup> See Appendix, note <sup>218</sup>.

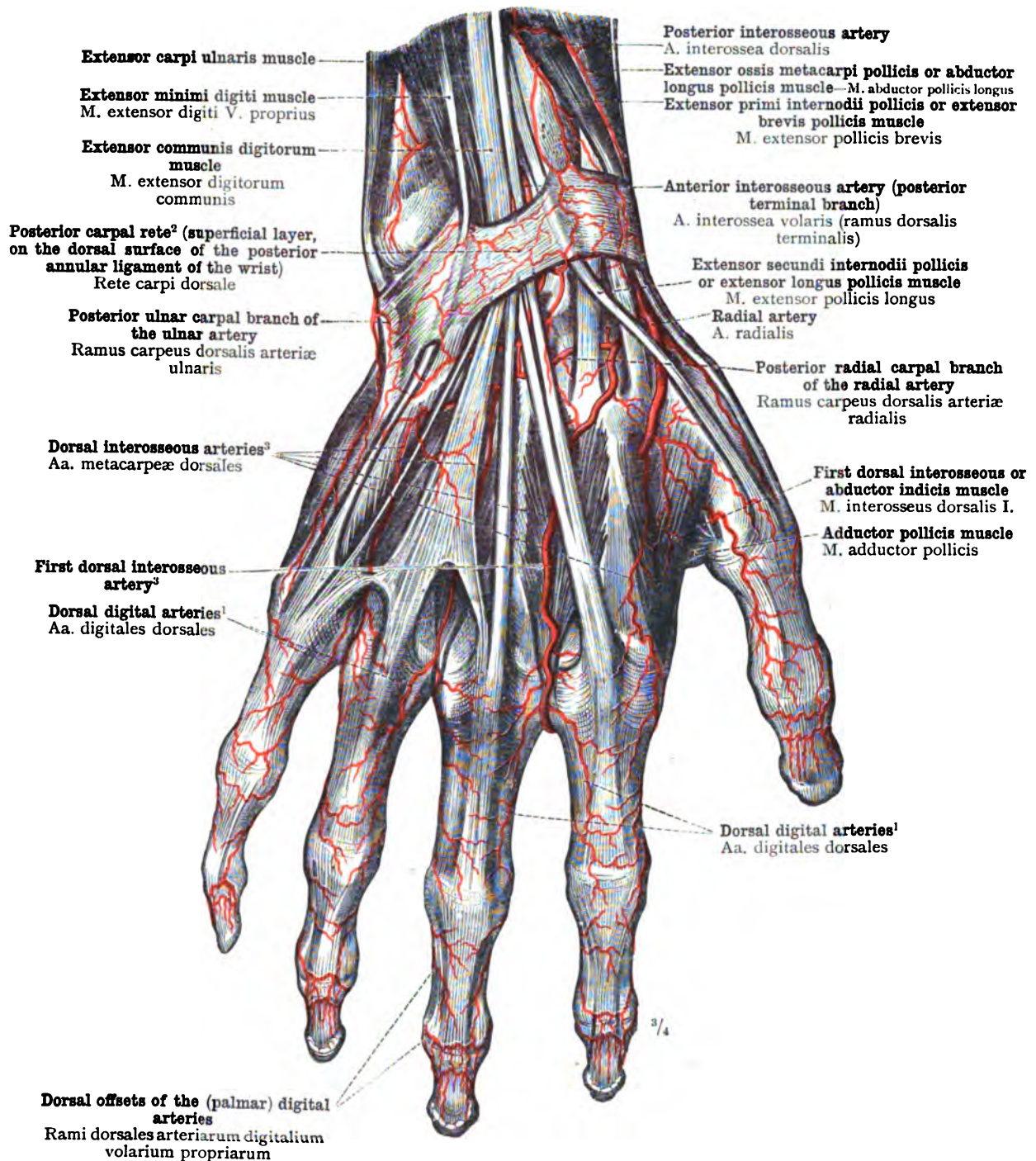
<sup>3</sup> See Appendix, note <sup>213</sup>.

<sup>6</sup> Or *collateral digital arteries*. See Appendix, note <sup>213</sup>.

FIG. 1025.—THE SUPERFICIAL ARTERIES OF THE PALM OF THE HAND ; THE PALMAR DIGITAL ARTERIES.

In the thumb, the index, and the middle finger, the skin and the superficial fascia have been removed, thus exposing the digital sheaths of the flexor tendons (ligamenta vaginalia, etc.). In the ring and little fingers, the superficial fascia and the arteries ramifying in it have been preserved.





<sup>1</sup> These minute vessels are often ignored by English anatomists. See Appendix, note 213.—Tr.

<sup>2</sup> See Appendix, note 219.

<sup>3</sup> The first dorsal interosseous artery is called by Macalister the *metacarpal branch of the radial artery*. For the origin of this and of the other dorsal interosseous arteries, see Appendix, note 220.—Tr.

FIG. 1026.—THE SUPERFICIAL ARTERIES OF THE DORSUM OF THE HAND: THE RADIAL ARTERY, ARTERIA RADIALIS; THE POSTERIOR RADIAL CARPAL ARTERY, RAMUS CARPEUS DORSALIS ARTERIÆ RADIALIS, AND THE POSTERIOR ULNAR CARPAL ARTERY, RAMUS CARPEUS DORSALIS ARTERIÆ ULNARIS; THE POSTERIOR TERMINAL BRANCH OF THE ANTERIOR INTEROSSEOUS ARTERY, RAMUS DORSALIS TERMINALIS ARTERIÆ INTEROSSEÆ VOLARIS; THE SUPERFICIAL LAYER OF THE POSTERIOR CARPAL RETE, LAMINA SUPERFICIALIS RETIS CARPI DORSALIS; THE DORSAL INTEROSSEOUS ARTERIES, ARTERIÆ METACARPEÆ DORSALES; THAT OCCUPYING THE BACK OF THE SECOND SPACE (FIRST DORSAL INTEROSSEOUS ARTERY, ACCORDING TO QUAIN; METACARPAL BRANCH OF THE RADIAL ARTERY, ACCORDING TO MACALISTER) IS UNUSUALLY LARGE (A COMMON VARIETY). THE DORSAL DIGITAL ARTERIES, ARTERIÆ DIGITALES DORSALES, AND THE DORSAL OFFSETS OF THE PALMAR DIGITAL ARTERIES, RAMI DORSALES ARTERIARUM DIGITALIUM VOLARIUM PROPRIARUM. THE RIGHT HAND WITH THE DISTAL EXTREMITY OF THE FOREARM; SEEN FROM BEHIND.

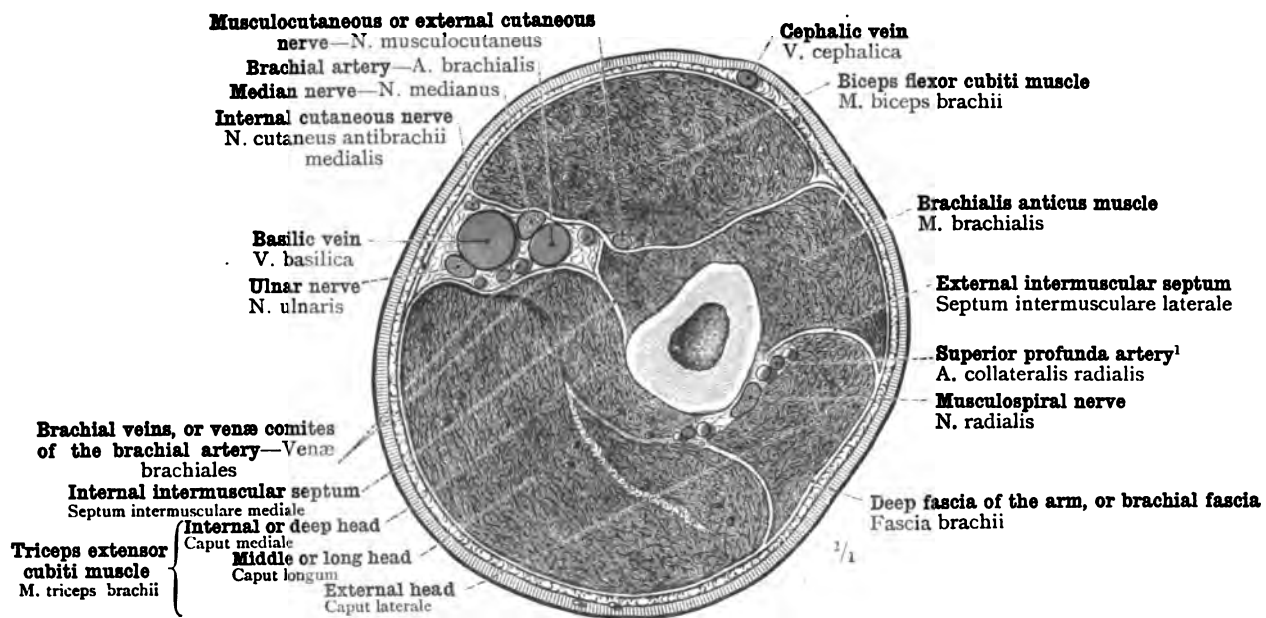


FIG. 1027.—TRANSVERSE SECTION THROUGH THE MIDDLE OF THE RIGHT UPPER ARM; UPPER SURFACE OF LOWER SEGMENT.

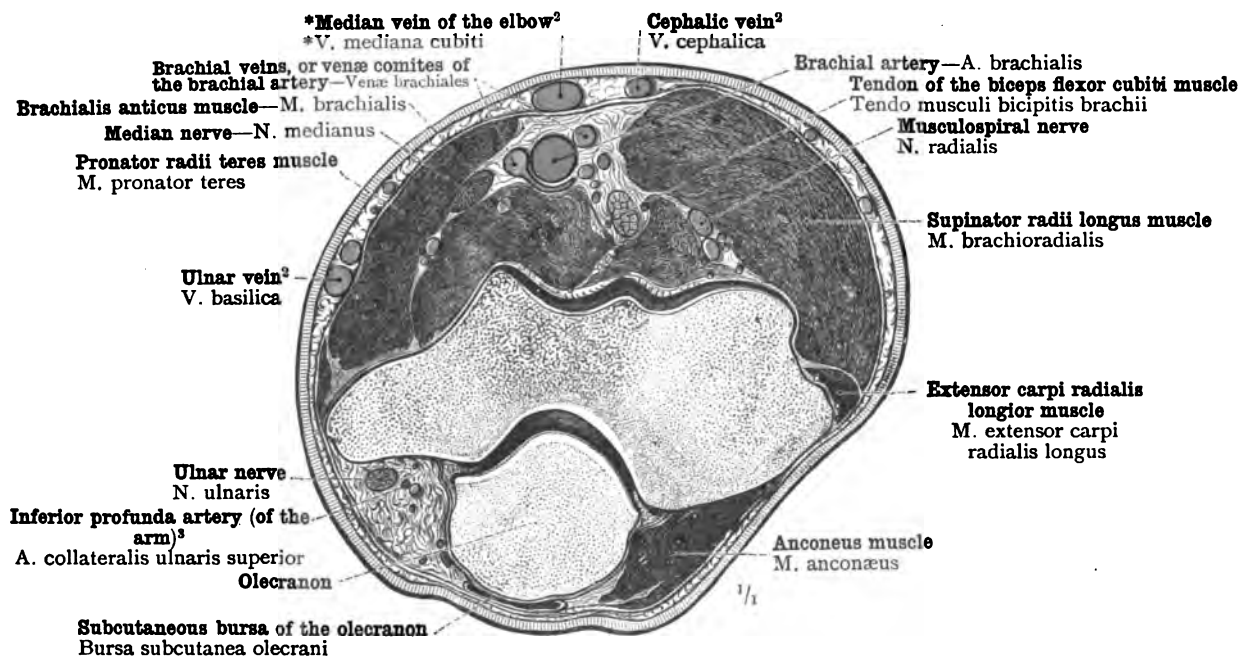


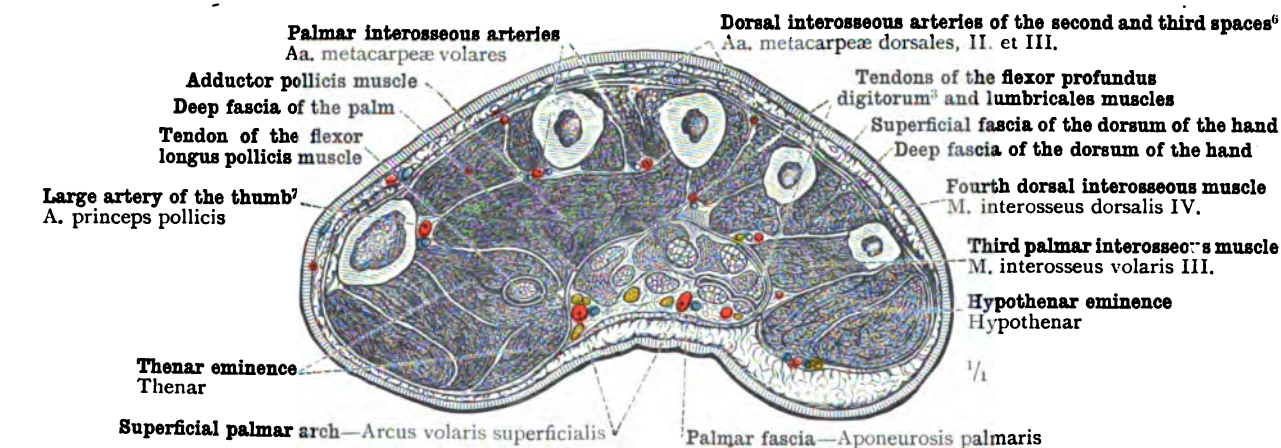
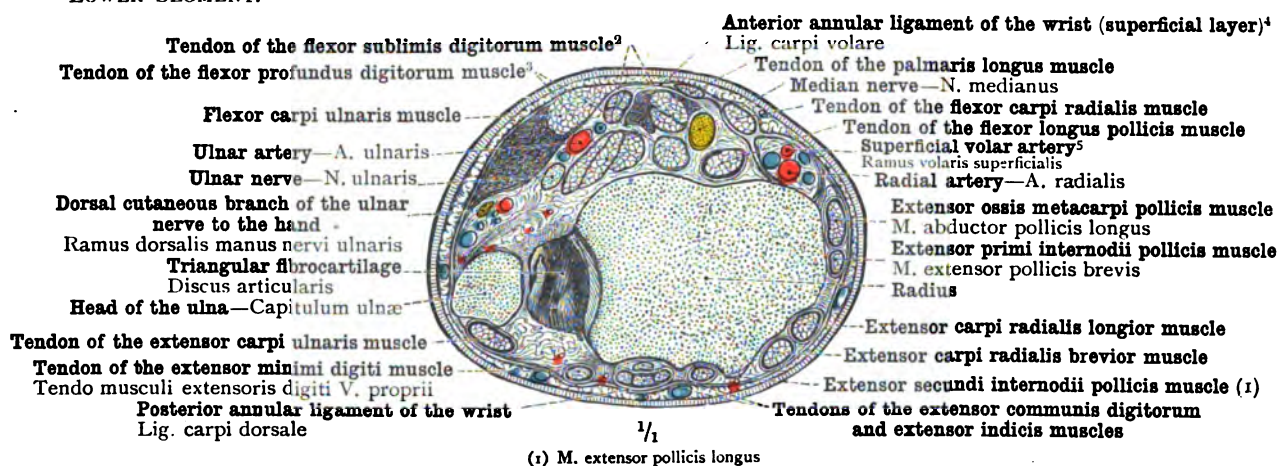
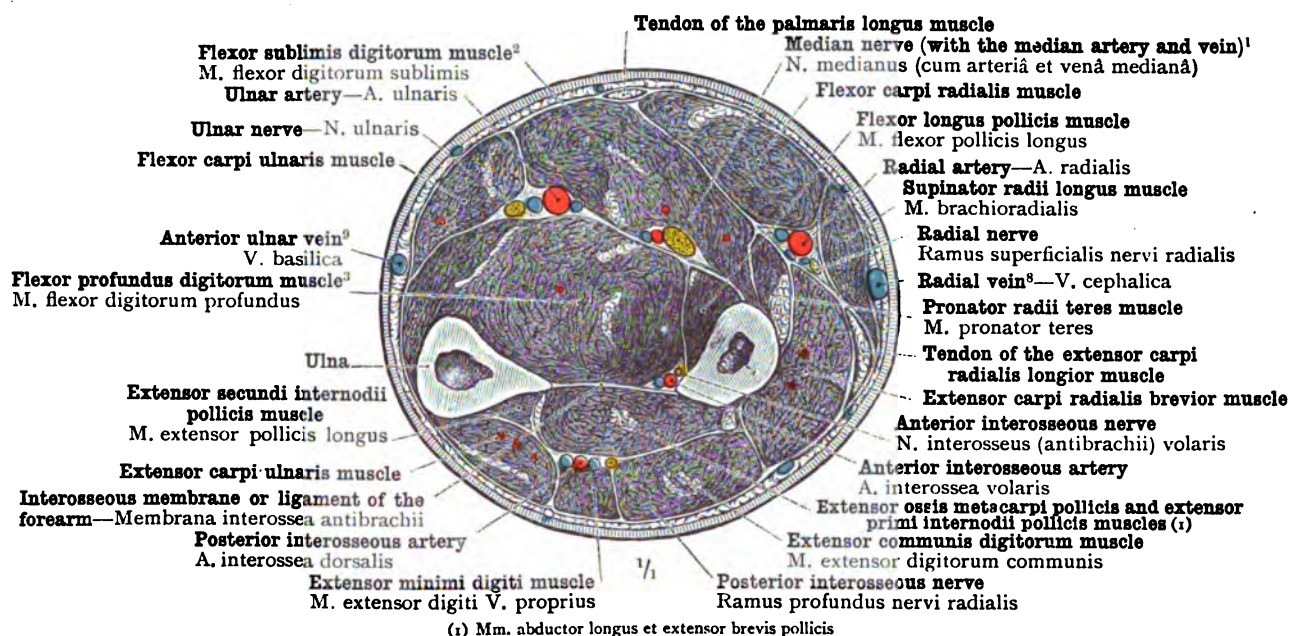
FIG. 1028.—TRANSVERSE SECTION THROUGH THE EXTENDED ELBOW-JOINT AT THE LEVEL OF THE TWO CONDYLES; UPPER SURFACE OF LOWER SEGMENT.

<sup>1</sup> See Appendix, notes 209 and 217.

<sup>2</sup> See Appendix, note 221.

<sup>3</sup> See Appendix, note 209.





<sup>1</sup> *Median Artery*.—Called by Macalister *comes nervi mediani artery*.

3 Or *flexor perforans* muscle.

7 See Appendix, note 218.

<sup>4</sup> See Appendix, note 214.

<sup>8</sup> See note <sup>1</sup> to p. 697.

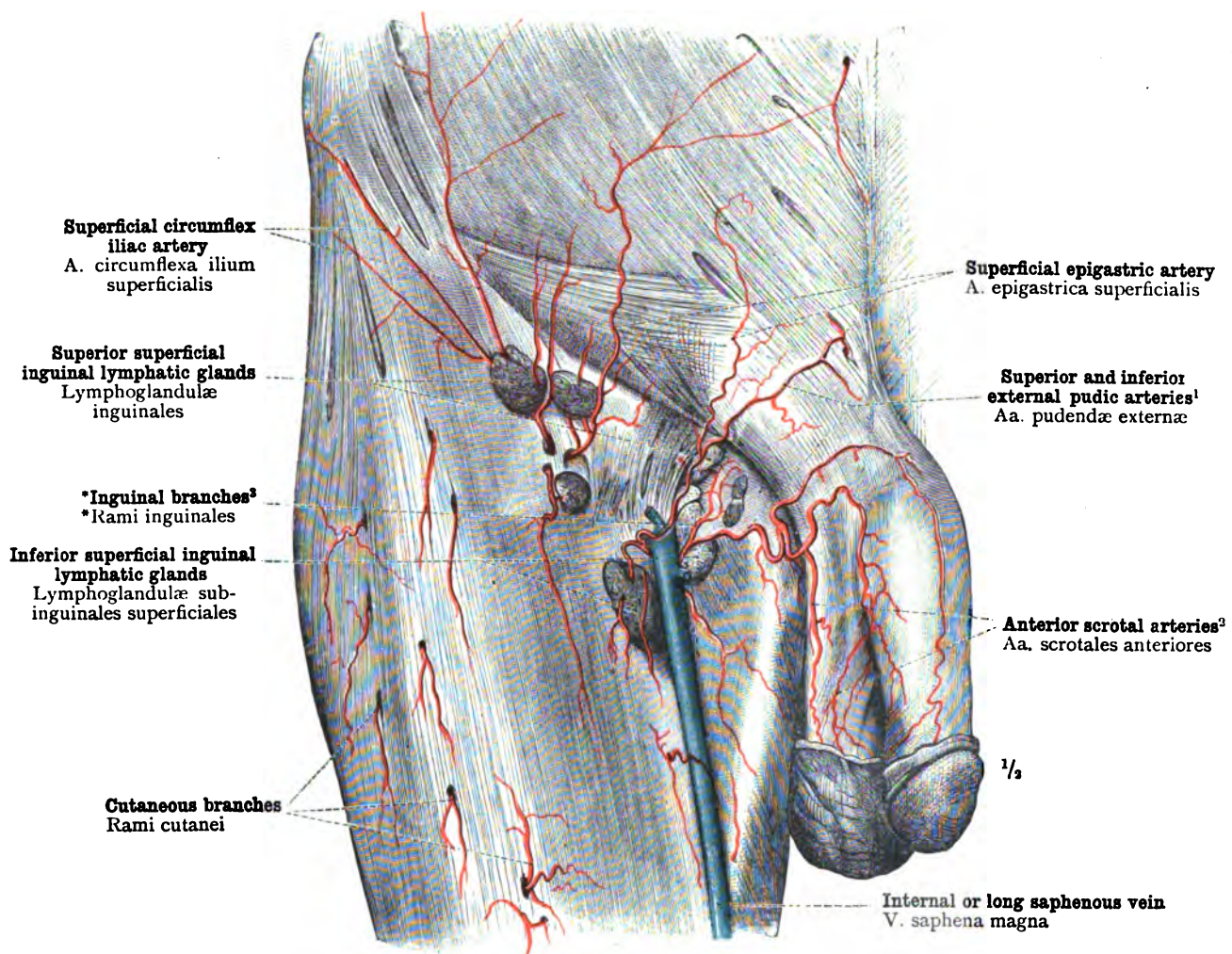
<sup>5</sup> See note 2 to p. 632.

<sup>9</sup> See note <sup>2</sup> to p. 697.

<sup>2</sup> Or *flexor perforatus* muscle.

<sup>6</sup> See Appendix, note 222.





<sup>1</sup> The upper of these is named by Macalister the *superior or superficial pubic*, the lower, the *inferior pubic* artery.—Tr.

<sup>2</sup> See Appendix, note 13<sup>3</sup>.

<sup>3</sup> *Rami Inguinales*.—According to Von Langer and Toldt (*op. cit.*, p. 525) there are "*inguinal branches of the femoral artery*, to the skin and superficial lymphatic glands of this region, in addition to the four superficial branches of the femoral artery commonly enumerated, viz., *superficial epigastric, superficial circumflex iliac, and superior and inferior external pudic* arteries (see note <sup>1</sup> above). Quain does not mention independent inguinal branches, stating that the four superficial branches just enumerated all give small branches to the lymphatic glands in the groin. Macalister mentions an additional superficial branch of the femoral artery in Scarpa's triangle, the *saphenous*, "*one, two, or three branches descending to the skin and lymphatic glands external to the saphena vein*" (*op. cit.*, p. 486). These *saphenous* branches are in part identical with the *rami inguinales* of Toldt.—Tr.

<sup>4</sup> Often called *femoral lymphatic glands*.

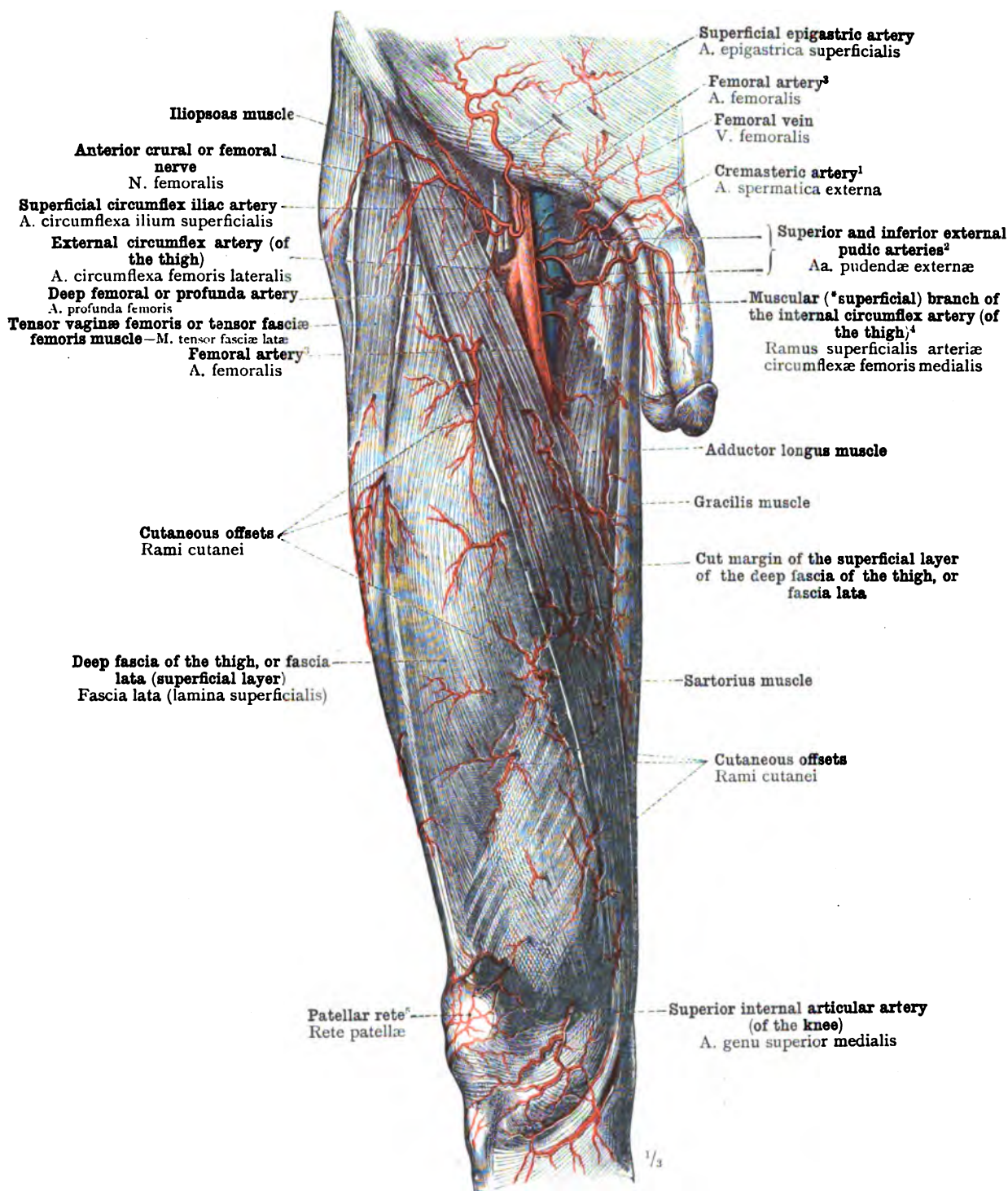
<sup>5</sup> *Subinguinal fossa*.—"Immediately below Poupart's ligament, a slight hollow is generally seen, corresponding to Scarpa's triangular space, in which, just internal to the centre, the femoral artery may be felt pulsating." (Quain, *op. cit.*, "Appendix on Superficial and Surgical Anatomy," p. 43). Though this author describes the hollow in question, he gives it no distinctive name, and I have therefore used a translation of Toldt's name of *fossa subinguinalis*.—Tr.

FIG. 1032.—THE SUBCUTANEOUS ARTERIES OF THE HYPOGASTRIC REGION (REGIO HYPOGASTRICA), THE INGUINAL REGION, THE MALE EXTERNAL GENERATIVE ORGANS, THE SUBINGUINAL FOSSA (see note <sup>5</sup> above) AND THE ADJOINING REGIONS OF THE RIGHT THIGH; THE SUPERIOR AND INFERIOR SUPERFICIAL INGUINAL LYMPHATIC GLANDS AND THE PROXIMAL PORTION OF THE INTERNAL OR LONG SAPHENOUS VEIN; SEEN FROM BEFORE.

The cribriform fascia (fascia cribrosa), the intercolumnar or spermatic fascia (fascia cremasterica Cooperi), and the deep fascia of the penis, have been left intact.

### Arteries of the Front of the Thigh.





<sup>1</sup> See Appendix, note 129.

<sup>2</sup> The upper of these is called by Macalister the *superior or superficial pubic*, the lower, the *inferior pubic artery*.—Tr.

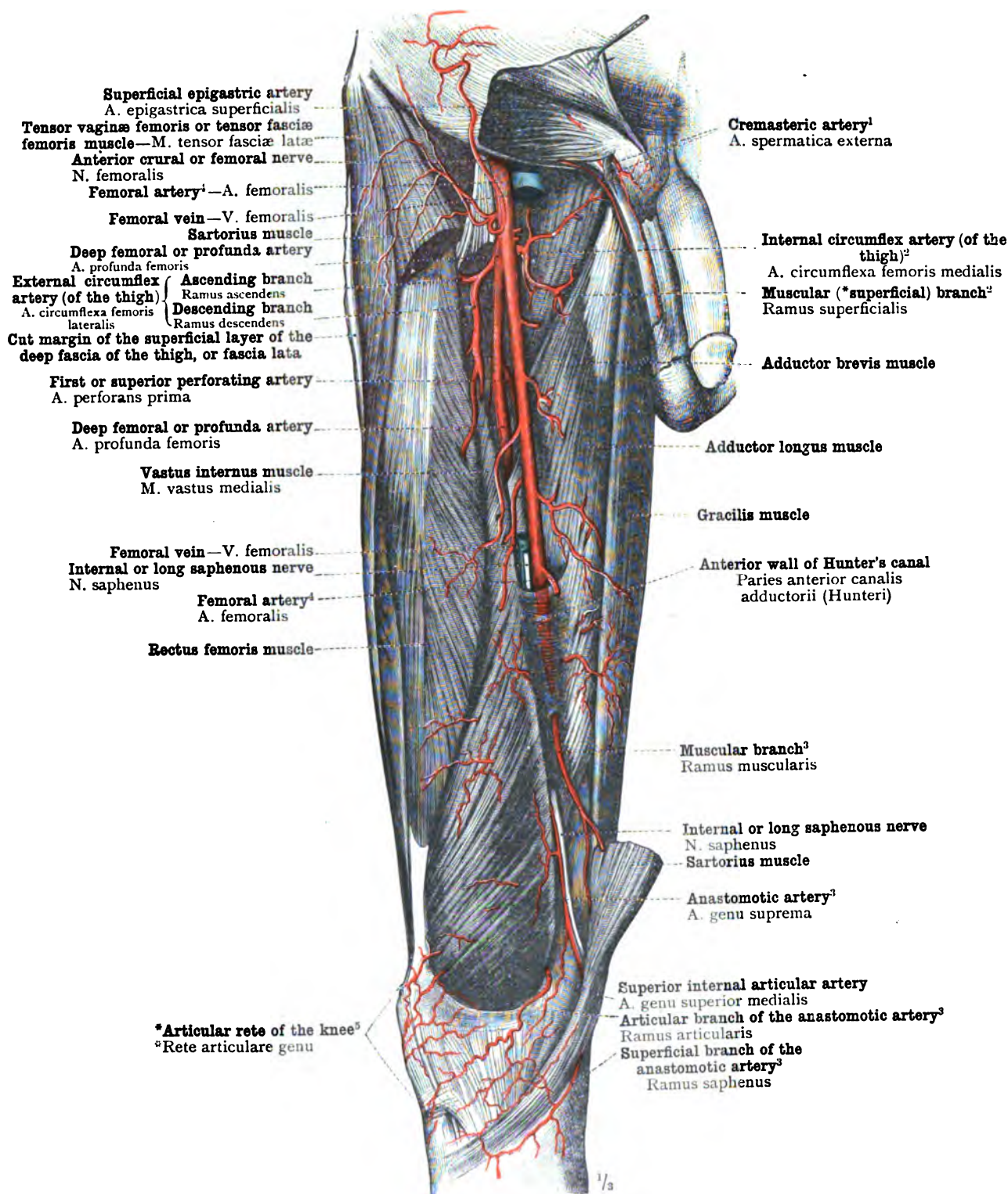
<sup>3</sup> See Appendix, note 223.

<sup>4</sup> See Appendix, note 224.

<sup>5</sup> See Appendix, note 225.

FIG. 1033.—THE TOPOGRAPHICAL ANATOMY OF SCARPA'S TRIANGLE (TRIGONUM FEMORALE *VEL* FOSSA SCARPÆ MAJOR) AND THE SUBCUTANEOUS ARTERIES OF THE ANTERIOR SURFACE OF THE RIGHT THIGH, THE REGION OF THE KNEE-JOINT, THE EXTERNAL GENERATIVE ORGANS, AND THE HYPOGASTRIC REGION (REGIO HYPOGASTRICA); SEEN FROM BEFORE.

The superficial layer of the deep fascia of the thigh, or fascia lata, has been removed in the region of Scarpa's triangle, and also from the surfaces of the sartorius, adductor longus, and tensor vaginæ femoris muscles.



<sup>1</sup> See Appendix, note 129.  
<sup>4</sup> See Appendix, note 223.

<sup>2</sup> See Appendix, note 224.  
<sup>5</sup> See Appendix, note 227.

<sup>3</sup> See Appendix, note 226.

FIG. 1034.—THE FEMORAL ARTERY, ARTERIA FEMORALIS (see Appendix, note 223), EXPOSED AS FAR AS ITS ENTRY INTO HUNTER'S CANAL (see Appendix, note 228), AND THE DEEP FEMORAL OR PROFUNDA ARTERY, ARTERIA PROFUNDA FEMORIS.

The middle portion of the sartorius muscle has been cut away.

### Arteries of the Front of the Thigh.



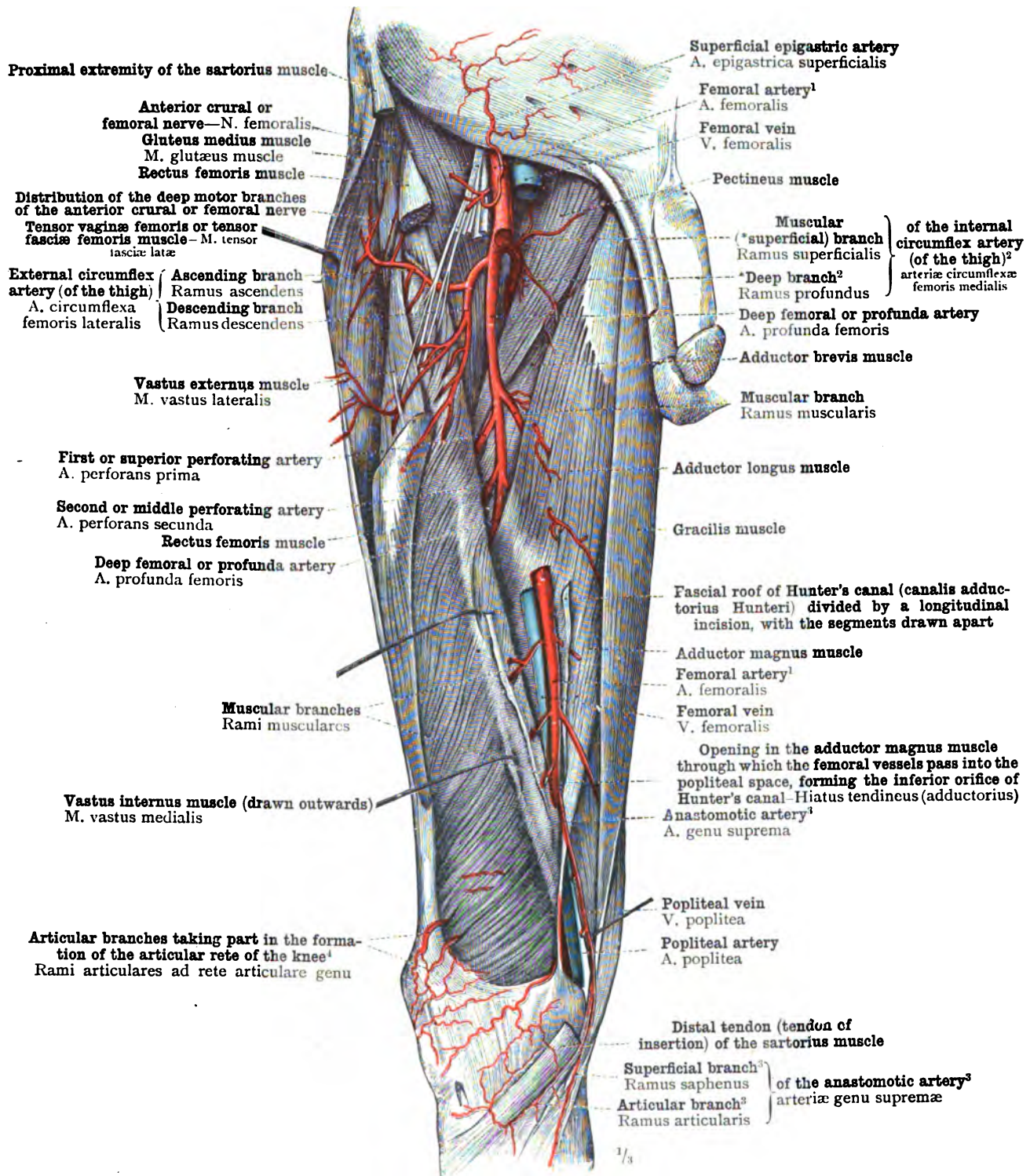
<sup>1</sup> See Appendix, note 223.<sup>2</sup> *Ramus Profundus*.—The so-called \*deep branch of the internal circumflex artery is by English anatomists regarded as the continuation of that vessel itself. See Appendix, note 224.—TR.<sup>3</sup> See Appendix, note 226.<sup>4</sup> See Appendix, note 227.

FIG. 1035.—THE DEEP FEMORAL OR PROFUNDA ARTERY, ARTERIA PROFUNDA FEMORIS, EXPOSED BY THE PARTIAL REMOVAL OF THE (SUPERFICIAL) FEMORAL ARTERY (see Appendix, note 223); THE (SUPERFICIAL) FEMORAL ARTERY AND VEIN, ARTERIA ET VENA FEMORALIS, IN HUNTER'S CANAL (CANALIS ADDUCTORIUS HUNTERI), THE FASCIAL ROOF OF WHICH HAS BEEN DIVIDED; THE PASSAGE OF THE (SUPERFICIAL) FEMORAL VESSELS THROUGH THE OPENING IN THE ADDUCTOR MAGNUS MUSCLE (HIATUS TENDINEUS ADDUCTORIUS). SEEN FROM BEFORE.



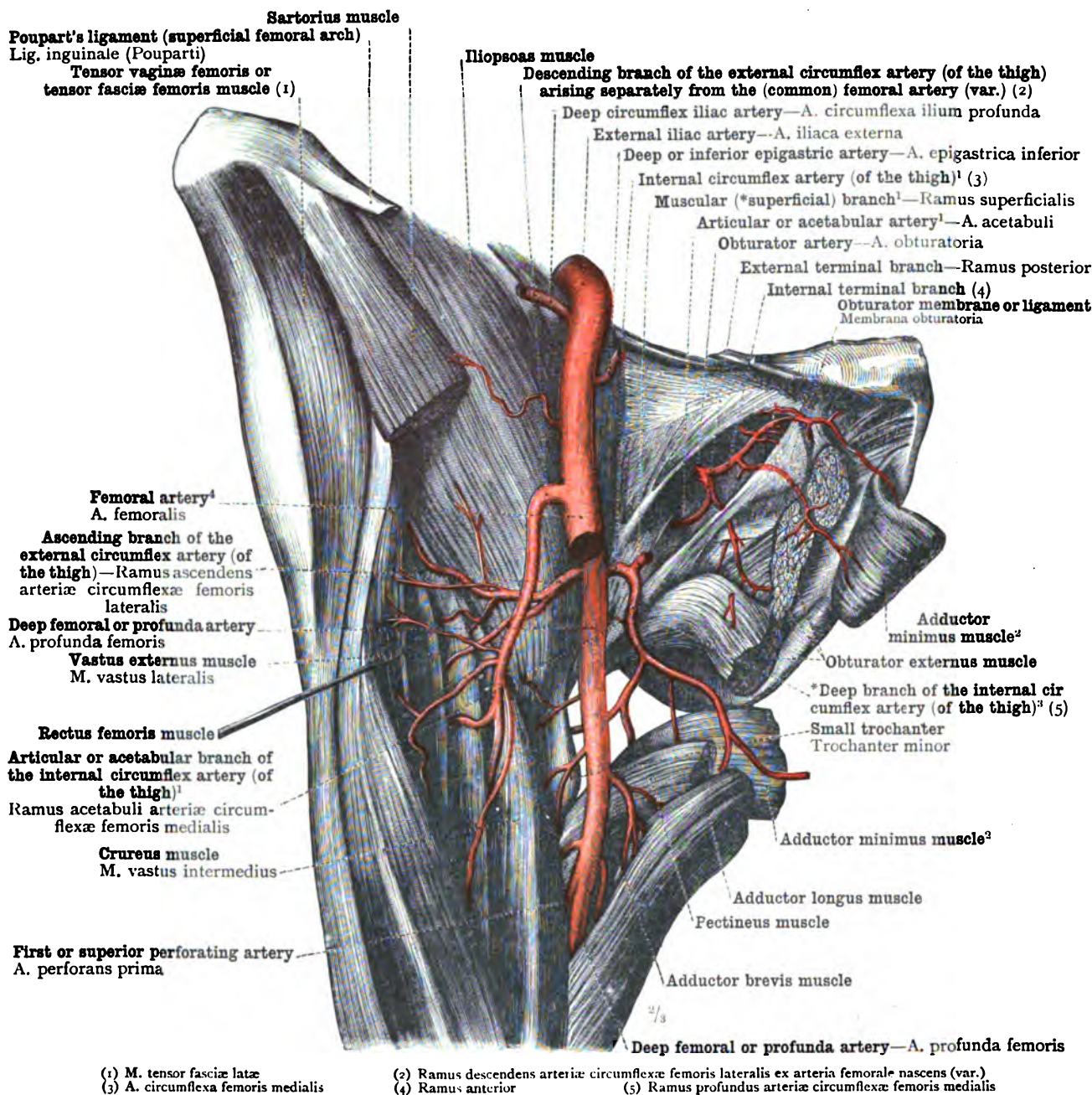


FIG. 1036.—THE RIGHT OBTURATOR ARTERY, ITS DIVISION INTO INTERNAL AND EXTERNAL TERMINAL BRANCHES, AND THE ORIGIN FROM THE LATTER OF THE ARTICULAR OR ACETABULAR ARTERY. THE DEEP FEMORAL OR PROFUNDA ARTERY, THE \*DEEP BRANCH OF THE INTERNAL CIRCUMFLEX ARTERY (see Appendix, note 224), AND ITS ARTICULAR OR ACETABULAR BRANCH, RAMUS ACETABULI. OF THE TWO PRINCIPAL BRANCHES OF THE EXTERNAL CIRCUMFLEX ARTERY, THE ASCENDING BRANCH ARISES IN THIS SPECIMEN FROM THE DEEP FEMORAL OR PROFUNDA ARTERY, BUT THE DESCENDING BRANCH ARISES FROM THE (COMMON) FEMORAL ARTERY (VAR.).

The sartorius muscle has been removed, except for the proximal extremity; the pectineus, adductor longus, and adductor brevis muscles have been divided transversely, the parts below the incision have been drawn inwards, and the proximal extremities have been cut away. The adductor magnus muscle has been entirely removed, the adductor minimus muscle (see note 2 above) has been divided transversely, and the segments have been drawn apart. The obturator externus muscle, which has been thus exposed, has been divided by an incision passing vertically downwards from its upper border, and the inner segment of the muscle has been turned downwards and inwards.

### Arteries of the Front of the Thigh.



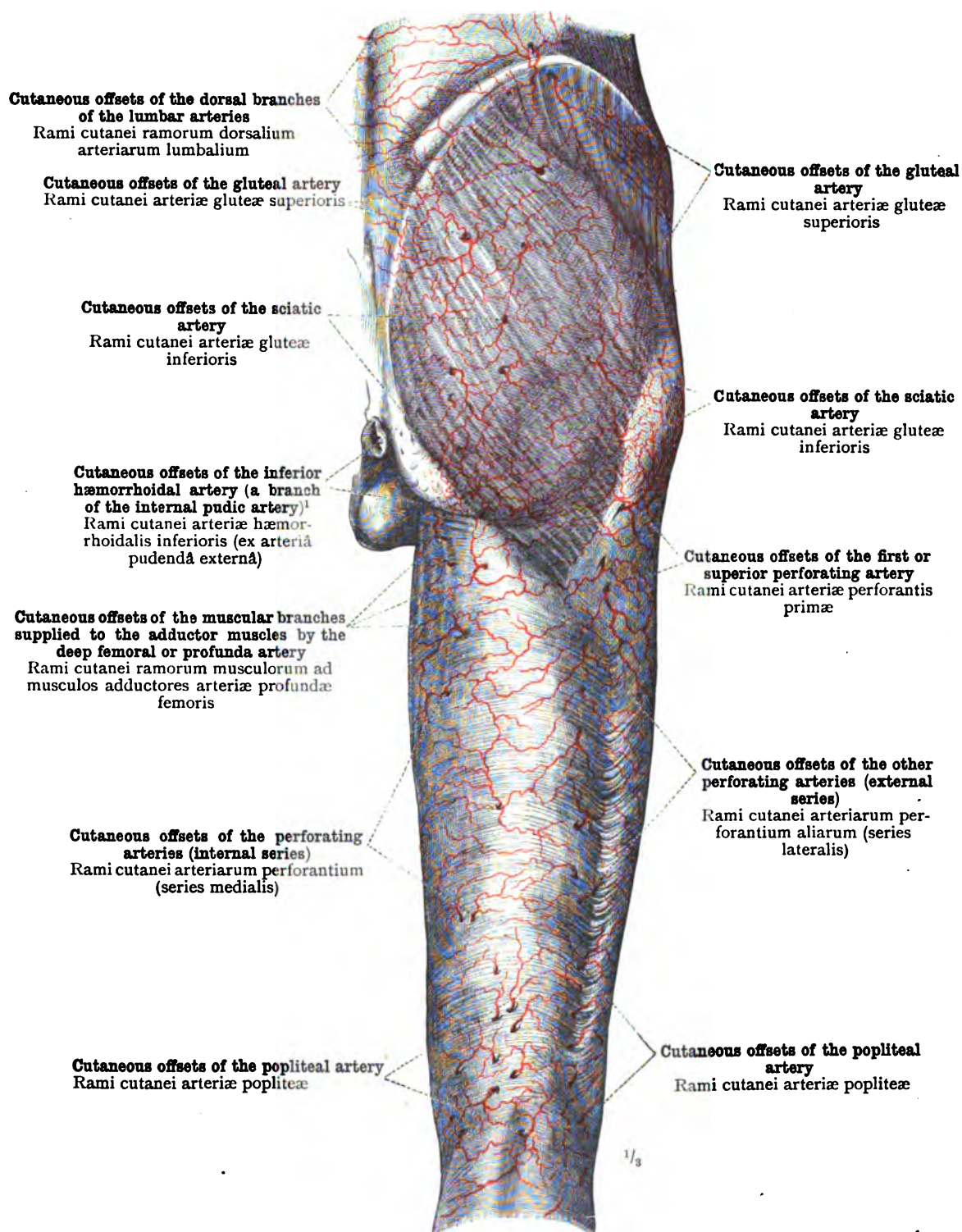
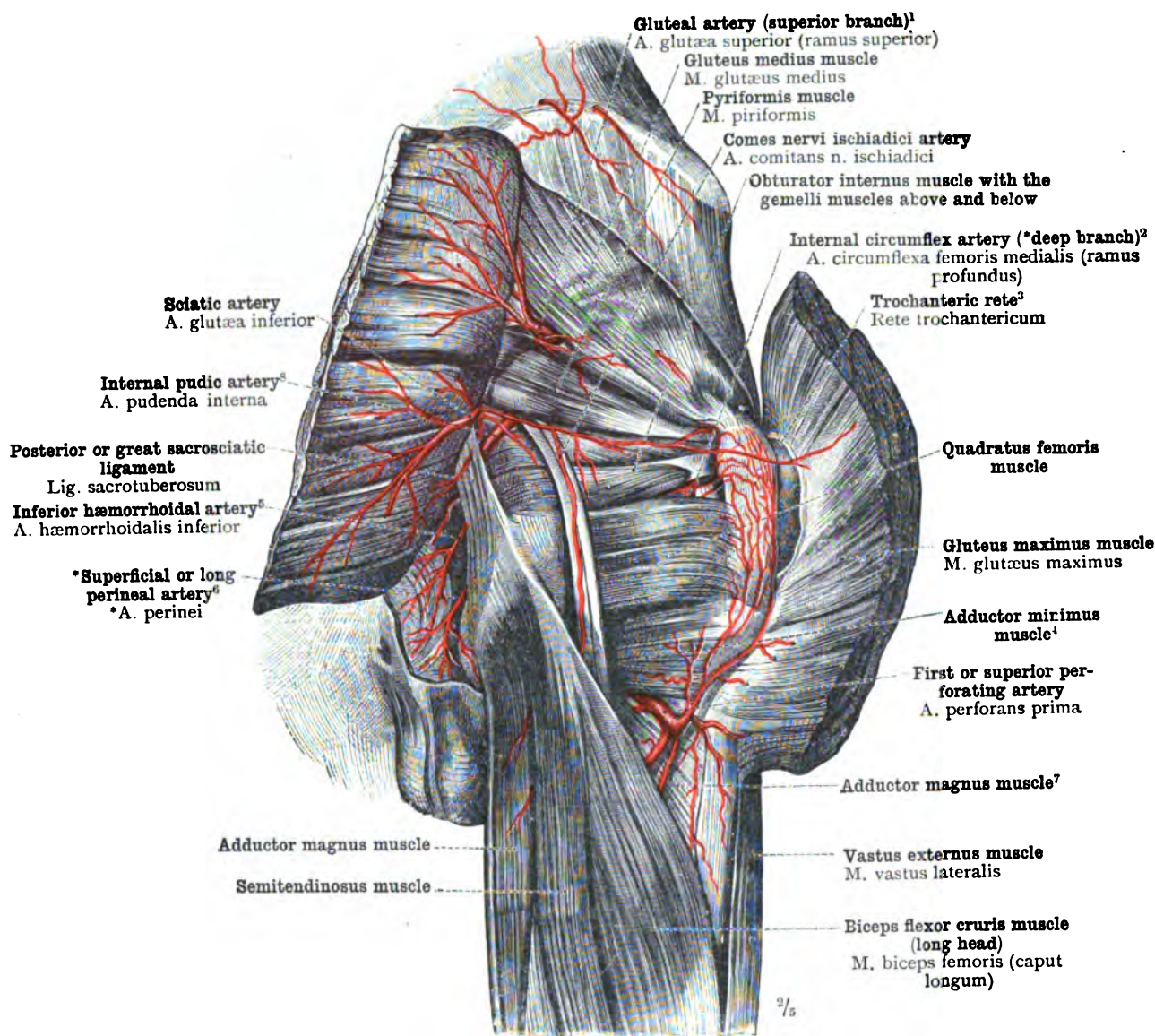


FIG. 1037.—THE CUTANEOUS ARTERIES OF THE BUTTOCK, THE BACK OF THE THIGH, AND THE HAM. RIGHT LOWER EXTREMITY, SEEN FROM BEHIND.

Arteries of the Buttock, the Back of the Thigh, and the Ham.



¹ See Appendix, note 229.

² See note 2 to p. 643 and Appendix, note 224.

³ See Appendix, note 230.

⁴ See note 2 to p. 644.

⁵ Quain gives *external hæmorrhoidal* as an alternative name for this vessel, while Macalister calls it the *anal artery*.

⁶ See Appendix, note 247.

⁷ See Appendix, note 231.

⁸ See Appendix, note 139.

FIG. 1038.—THE DEEP ARTERIES OF THE RIGHT BUTTOCK; SEEN FROM BEHIND. THE UPPER BRANCH, RAMUS SUPERIOR, OF THE DEEP PART OF THE GLUTEAL ARTERY, ARTERIA GLUTEA SUPERIOR; THE SCIATIC ARTERY, ARTERIA GLUTEA INFERIOR, AND THE COMES NERVI ISCHIADICI ARTERY, ARTERIA COMITANS NERVI ISCHIADICI; THE INTERNAL PUDIC ARTERY, ARTERIA PUDENDA INTERNA, FROM ITS EMERGENCE FROM THE PELVIS THROUGH THE GREAT SACROSCIATIC FORAMEN TO ITS ENTRY INTO THE ISCHIORECTAL FOSSA THROUGH THE SMALL SACROSCIATIC FORAMEN; THE INFERIOR OR EXTERNAL HÆMORRHOIDAL ARTERY (ANAL ARTERY), ARTERIA HÆMORRHOIDALIS INFERIOR, AND THE SUPERFICIAL OR LONG PERINEAL ARTERY, ARTERIA PERINEI. THE EMERGENCE OF THE FIRST OR SUPERIOR PERFORATING ARTERY, ARTERIA PERFORANS PRIMA, BETWEEN THE ADDUCTOR MINIMUS AND ADDUCTOR MAGNUS MUSCLES (see note 2 to p. 644), AND ITS DIVISION INTO ASCENDING AND DESCENDING BRANCHES; THE CRUCIAL ANASTOMOSIS AND THE TROCHANTERIC RETE, RETE TROCHANTERICUM.

The gluteus maximus muscle has been cut across a little above and internal to its middle, and the segments have been turned inwards and outwards, respectively.

#### Arteries of the Buttock.



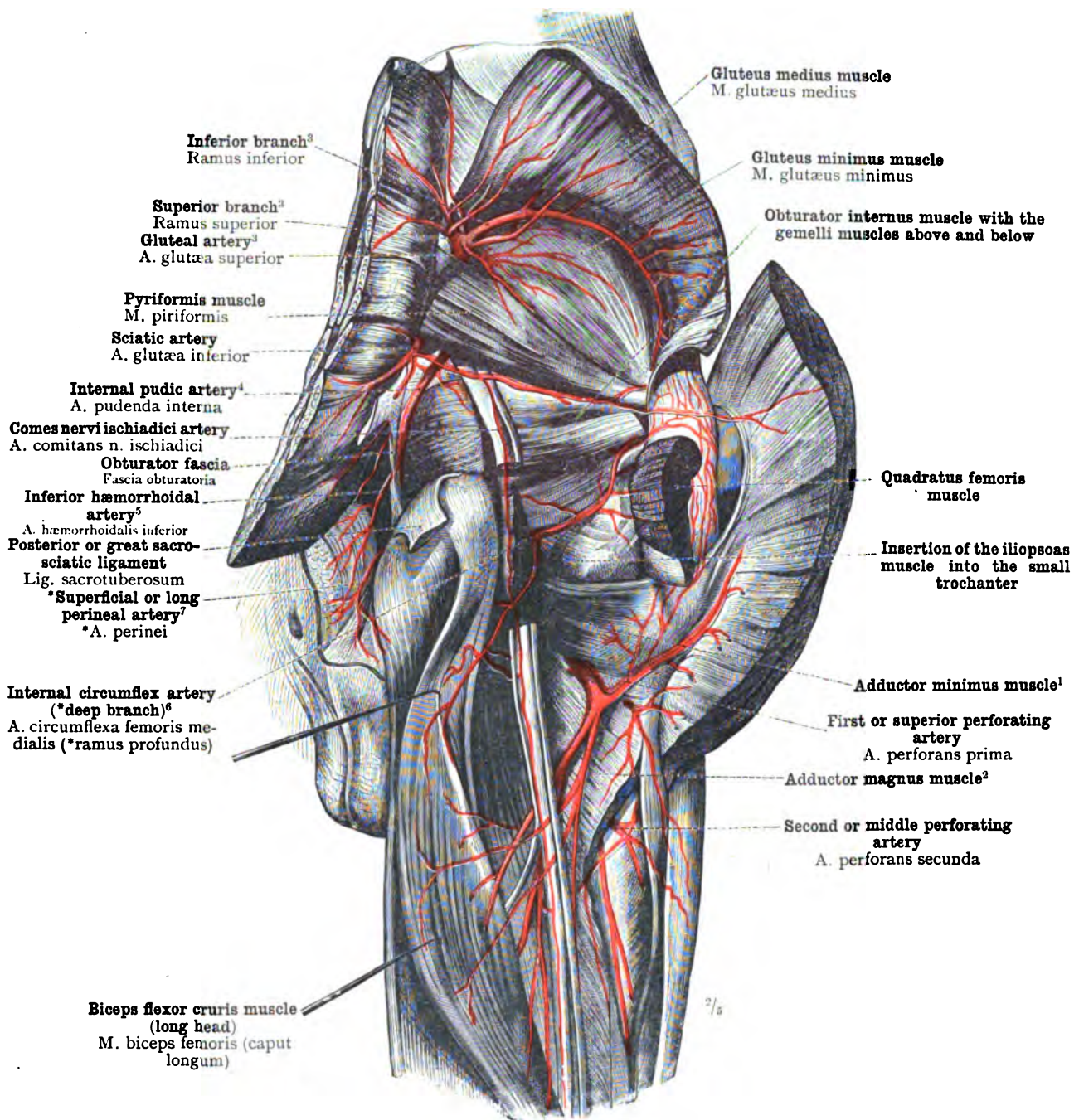
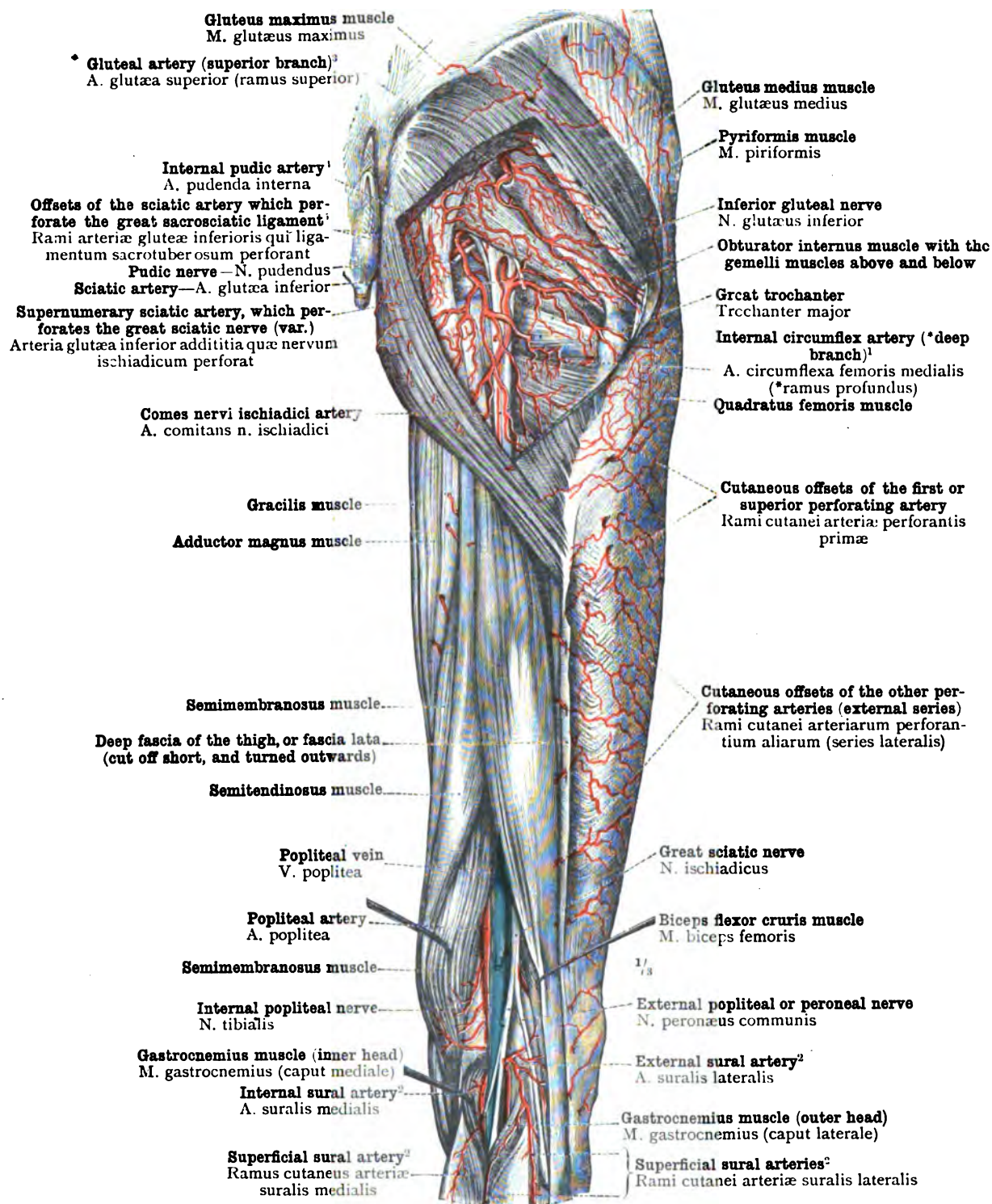
<sup>1</sup> See note <sup>2</sup> to p. 644.<sup>2</sup> See Appendix, note <sup>231</sup>.<sup>3</sup> See Appendix, note <sup>239</sup>.<sup>4</sup> See Appendix, note <sup>139</sup>.<sup>5</sup> Quain gives *external hæmorrhoidal* as an alternative name for this vessel, while Mcalister calls it the *anal artery*.<sup>6</sup> See note <sup>2</sup> to p. 643 and Appendix, note <sup>224</sup>.<sup>7</sup> See Appendix, note <sup>147</sup>.

FIG. 1039.—THE DEEP ARTERIES OF THE RIGHT BUTTOCK AND OF THE ADJOINING PORTION OF THE RIGHT THIGH

In the preparation shown in Fig. 1037, the gluteus medius muscle was turned upwards, the posterior or great sacrosclatic ligament (ligamentum sacrotuberosum) was divided, and, after detaching it from the obturator fascia, its segments were drawn apart, in order to show the internal pudic artery (arteria pudenda interna) in the small sacrosclatic foramen. By the removal of parts of the great sciatic nerve and the quadratus femoris muscle, the internal circumflex artery and its branches (\*ramus profundus arteriæ circumflexæ femoris medialis—see Appendix, note <sup>224</sup>) were displayed beneath the obturator externus muscle. By the removal of part of the femoral attachment (insertion) of the adductor magnus muscle (see Appendix, note <sup>231</sup>), the second or middle perforating artery was also displayed.

## Arteries of the Buttock.



<sup>1</sup> See note <sup>2</sup> to p. 643 and Appendix, note 224.  
<sup>5</sup> One of these branches, which has an inward course after perforating the great sacrosciatic ligament, is distinguished by English anatomists as the *coccygeal branch* of the *sciatic artery*.—Tr.

<sup>2</sup> See Appendix, note 232.

<sup>3</sup> See Appendix, note 226.

<sup>4</sup> See Appendix, note 179.

FIG. 1040.—TOPOGRAPHICAL ANATOMY OF THE BUTTOCK AND THE HAM; THE CUTANEOUS ARTERIES OF THE POSTERO-EXTERNAL PART OF THE RIGHT THIGH; SEEN FROM BEHIND.

### Arteries of the Buttock, the Back of the Thigh, and the Ham.



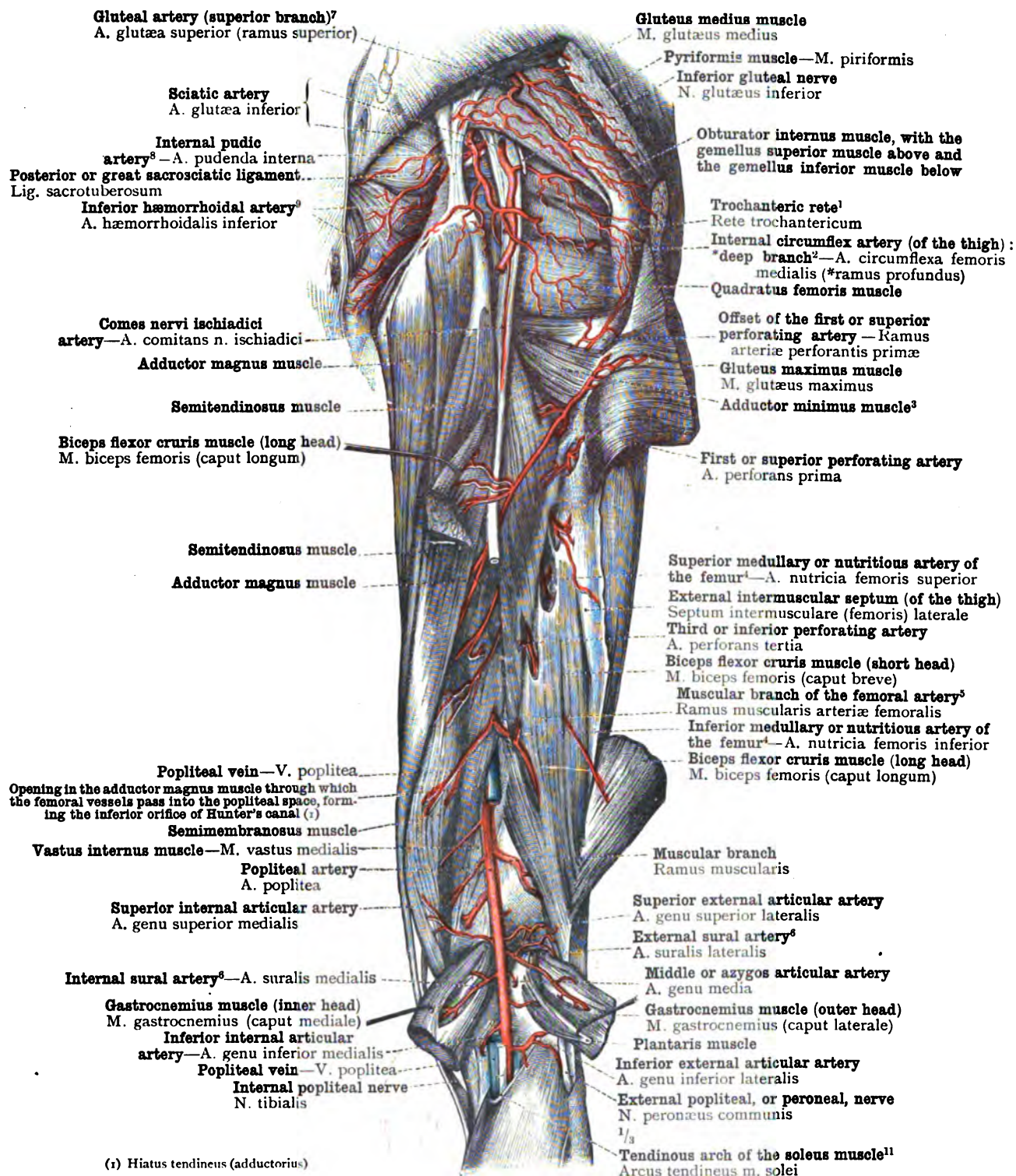


FIG. 1041.—THE DEEP ARTERIES OF THE BUTTOCK; THE PERFORATING ARTERIES, ARTERIÆ PERFORANTES; THE POPLITEAL ARTERY, ARTERIA POPLITEA, FROM THE OPENING IN THE ADDUCTOR MAGNUS MUSCLE TO THE ENTRY OF THE ARTERY INTO THE \*POPLITEAL CANAL, \*CANALIS POPLITEUS<sup>10</sup>; THE MUSCULAR AND ARTICULAR BRANCHES OF THE POPLITEAL ARTERY; SEEN FROM BEHIND.

<sup>1</sup> See Appendix, note 230.

<sup>2</sup> See note 2 to p. 643 and Appendix, note 224.

<sup>3</sup> See note 2 to p. 644.

<sup>4</sup> See Appendix, note 233.

<sup>5</sup> See Appendix, note 223.

<sup>6</sup> See Appendix, note 232.

<sup>7</sup> See Appendix, note 229.

<sup>8</sup> See Appendix, note 139.

<sup>9</sup> Quain gives *external hæmorrhoidal* as an alternative name for this vessel, while Macalister calls it the *anal artery*.

<sup>10</sup> See Appendix, note 234.

<sup>11</sup> See note 7 to p. 363 in Part III.

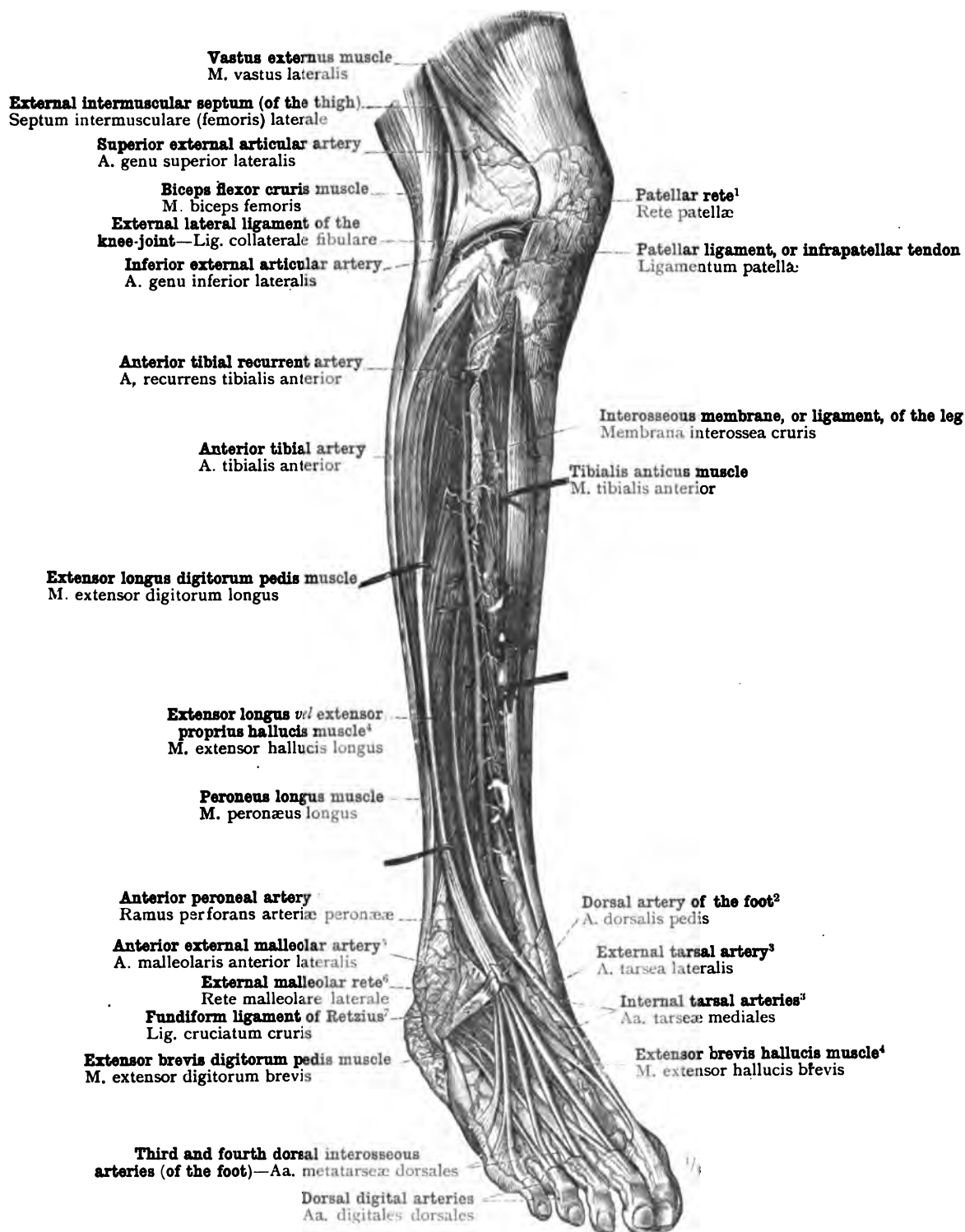


FIG. 1042.—THE ANTERIOR TIBIAL ARTERY AND ITS CONTINUATION INTO THE DORSAL ARTERY OF THE FOOT, OR DORSALIS PEDIS ARTERY.

The tibialis anticus and the extensor longus digitorum pedis muscles have been drawn apart, and the uppermost part of the former has been cut away. The anterior annular ligament of the ankle has been divided by a longitudinal incision, and its outer limb (fundiform ligament of Retzius<sup>7</sup>) has been raised from the subjacent tendons of the extensor longus digitorum pedis and peroneus tertius muscles.

<sup>1</sup> See Appendix, note 227.

<sup>2</sup> Often known in England by its Latin name of *dorsalis pedis* artery.

<sup>3</sup> See Appendix, note 235.

<sup>4</sup> See note 2 to p. 364 in Part III.

<sup>5</sup> See Appendix, note 236.

<sup>6</sup> See Appendix, note 237.

<sup>7</sup> See Appendix, note 238.



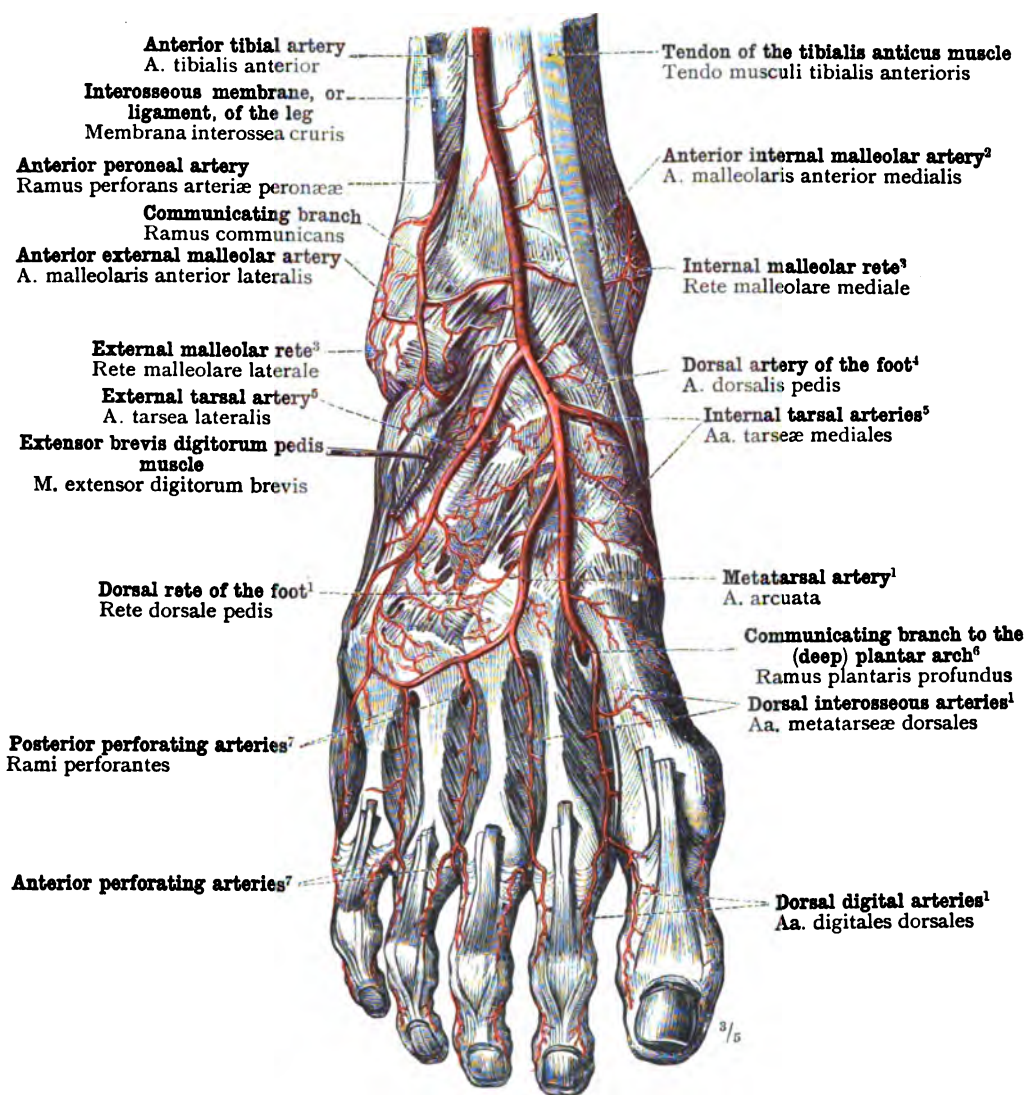
<sup>1</sup> See Appendix, note 239.<sup>2</sup> See Appendix, note 236.<sup>3</sup> See Appendix, note 237.<sup>4</sup> Often known in England by its Latin name of *dorsalis pedis* artery.<sup>5</sup> See Appendix, note 235.<sup>6</sup> See Appendix, note 240.<sup>7</sup> See Appendix, note 241.

FIG. 1043.—THE DISTAL EXTREMITY OF THE ANTERIOR TIBIAL ARTERY, ITS COMMUNICATION WITH THE ANTERIOR PERONEAL ARTERY (RAMUS PERFORANS ARTERIÆ PERONÆÆ) AND ITS CONTINUATION INTO THE DORSAL ARTERY OF THE FOOT (ARTERIA DORSALIS PEDIS); THE ANTERIOR EXTERNAL AND ANTERIOR INTERNAL MALLEOLAR ARTERIES (ARTERIÆ MALLEOLARES ANTERIORES, MEDIALIS ET LATERALIS); THE EXTERNAL AND INTERNAL MALLEOLAR RETIA; THE EXTERNAL TARSAL ARTERY (ARTERIA TARSEA LATERALIS) AND THE INTERNAL TARSAL ARTERIES (ARTERIÆ TARSEÆ MEDIALES); THE METATARSAL ARTERY (ARTERIA ARCUATA); THE DORSAL ARTERIAL RETE OF THE FOOT; THE COMMUNICATING BRANCH OF THE DORSAL ARTERY OF THE FOOT TO THE DEEP PLANTAR ARCH OR FIRST POSTERIOR PERFORATING ARTERY (RAMUS PLANTARIS PROFUNDUS ARTERIÆ DORSALIS PEDIS—see Appendix, note 240); THE DORSAL INTEROSSEOUS ARTERIES (ARTERIÆ METATARSEÆ DORSALES), AND THEIR CONNECTIONS WITH THE POSTERIOR PERFORATING OFFSETS (RAMI PERFORANTES) OF THE DEEP PLANTAR ARCH; THE DORSAL DIGITAL ARTERIES (ARTERIÆ DIGITALES DORSALES), AND THEIR ANASTOMOSES WITH THE PLANTAR DIGITAL ARTERIES (THESE ANASTOMOSES BEING THE ANTERIOR PERFORATING ARTERIES OF ENGLISH ANATOMISTS—see Appendix, note 241). THE RIGHT FOOT WITH THE DISTAL EXTREMITY OF THE LEG; SEEN FROM THE DORSAL SIDE.

The extensor muscles of the toes were removed as far down as the heads of the metatarsal bones and the peroneus tertius muscle was cut completely away, in order to lay bare the arteries on the dorsum of the foot.

#### Arteries of the Dorsum of the Foot.

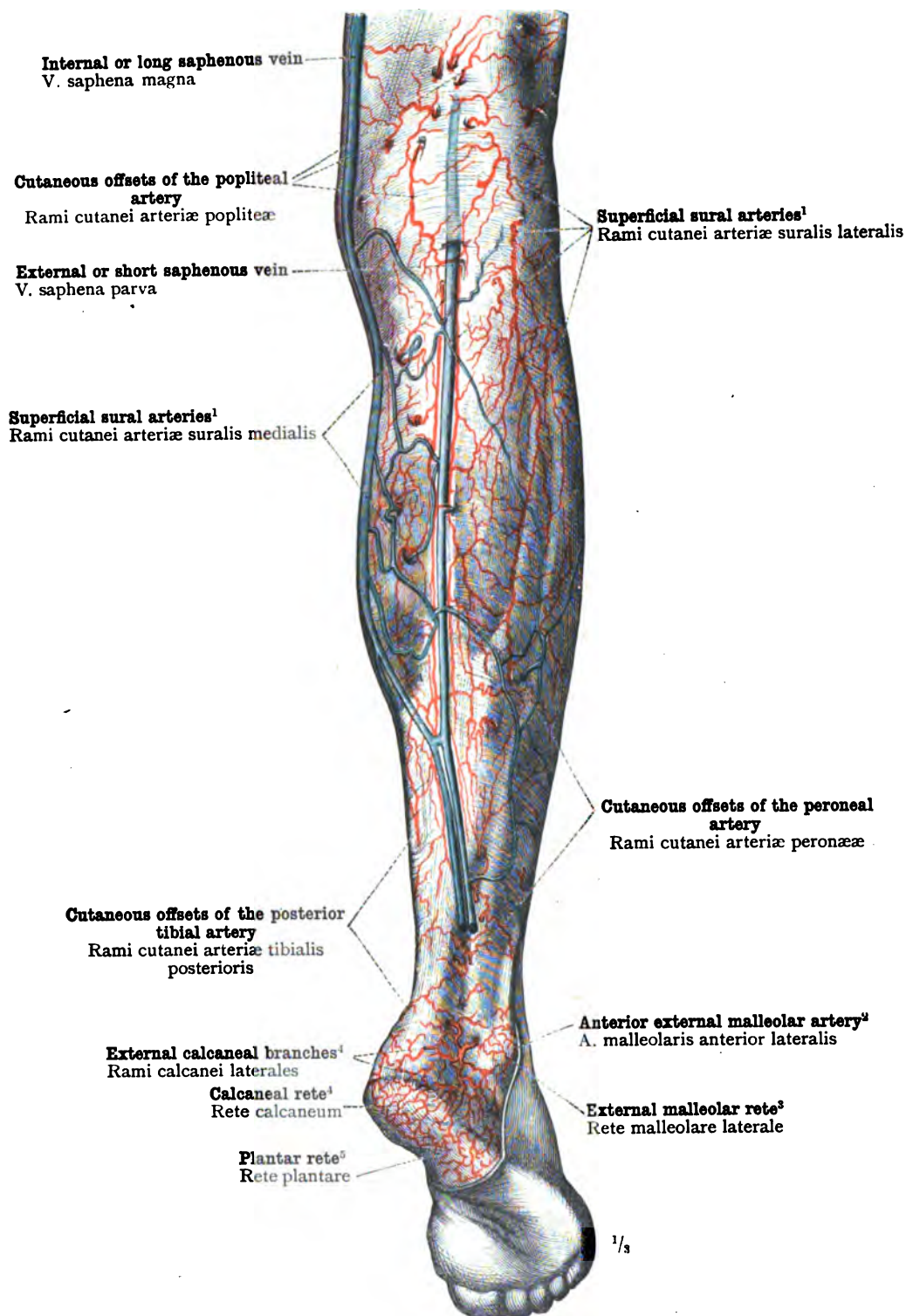
<sup>1</sup> See Appendix, note 232.<sup>2</sup> See Appendix, note 236.<sup>3</sup> See Appendix, note 237.<sup>4</sup> See Appendix, note 242.<sup>5</sup> See Appendix, note 243.

FIG. 1044.—THE SUBCUTANEOUS ARTERIES OF THE CALF AND OF THE POPLITEAL REGION IN ADDITION TO PORTIONS OF THE INTERNAL OR LONG AND THE EXTERNAL OR SHORT SAPHENOUS VEINS (VENA SAPHENA MAGNA ET VENA SAPHENA PARVA); THE CALCANEAL AND MALLEOLAR RETIA; THE POSTERIOR PORTION OF THE PLANTAR RETE. RIGHT LEG AND FOOT; SEEN FROM BEHIND AND THE OUTER SIDE.



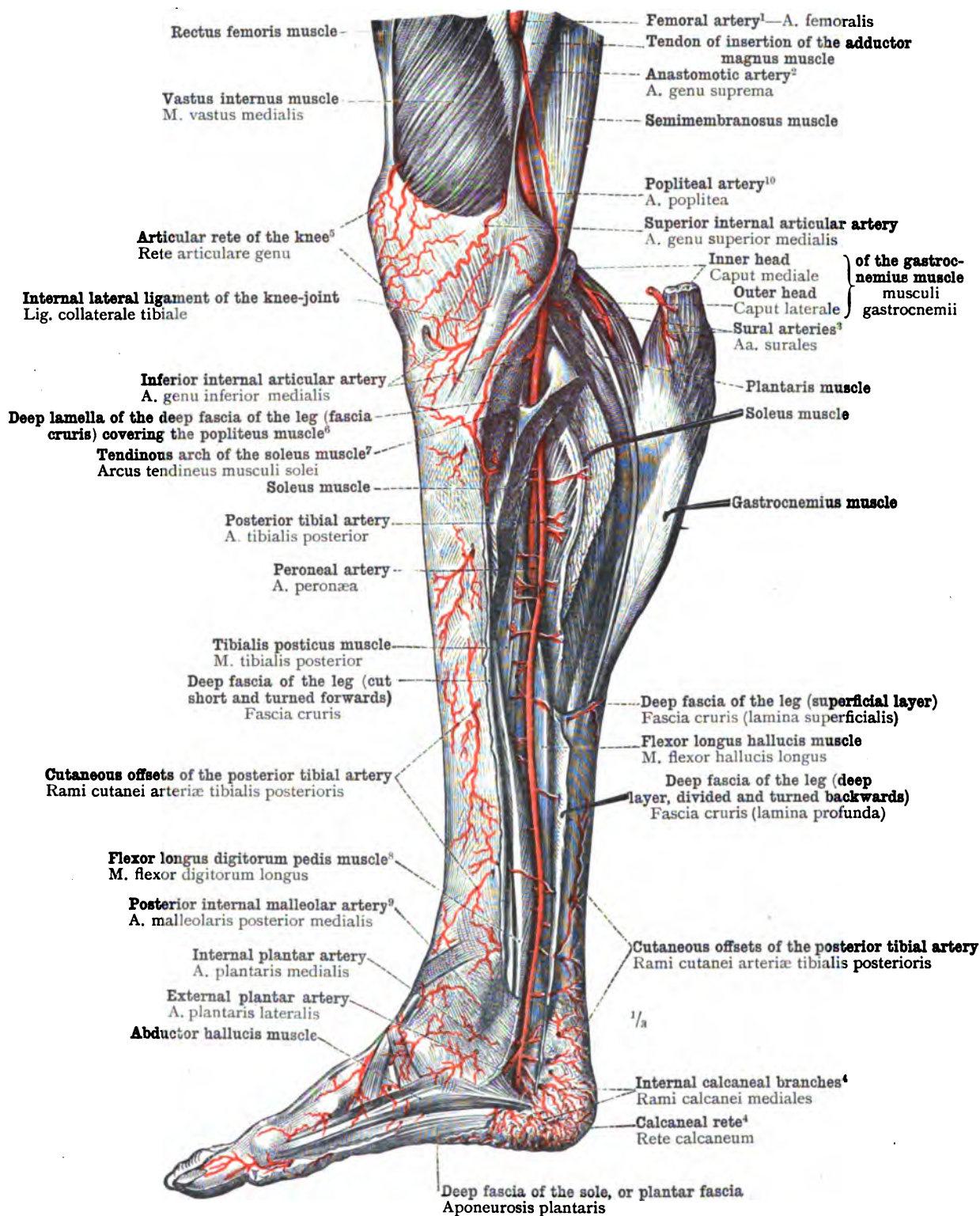
<sup>1</sup> See Appendix, note 223.<sup>2</sup> See Appendix, note 226.<sup>3</sup> See Appendix, note 232.<sup>4</sup> See Appendix, note 242.<sup>5</sup> See note 5 to p. 642.<sup>6</sup> See Appendix, note 244.<sup>7</sup> See note 7 to p. 363 in Part III.<sup>8</sup> Or *flexor perforans* muscle.<sup>9</sup> See Appendix, note 236.<sup>10</sup> See Appendix, note 245.

FIG. 1045.—THE POPLITEAL ARTERY, ITS PASSAGE THROUGH THE \*POPLITEAL CANAL (see Appendix, note 245), AND THE POSTERIOR TIBIAL ARTERY.

### Arteries of the Back of the Leg.

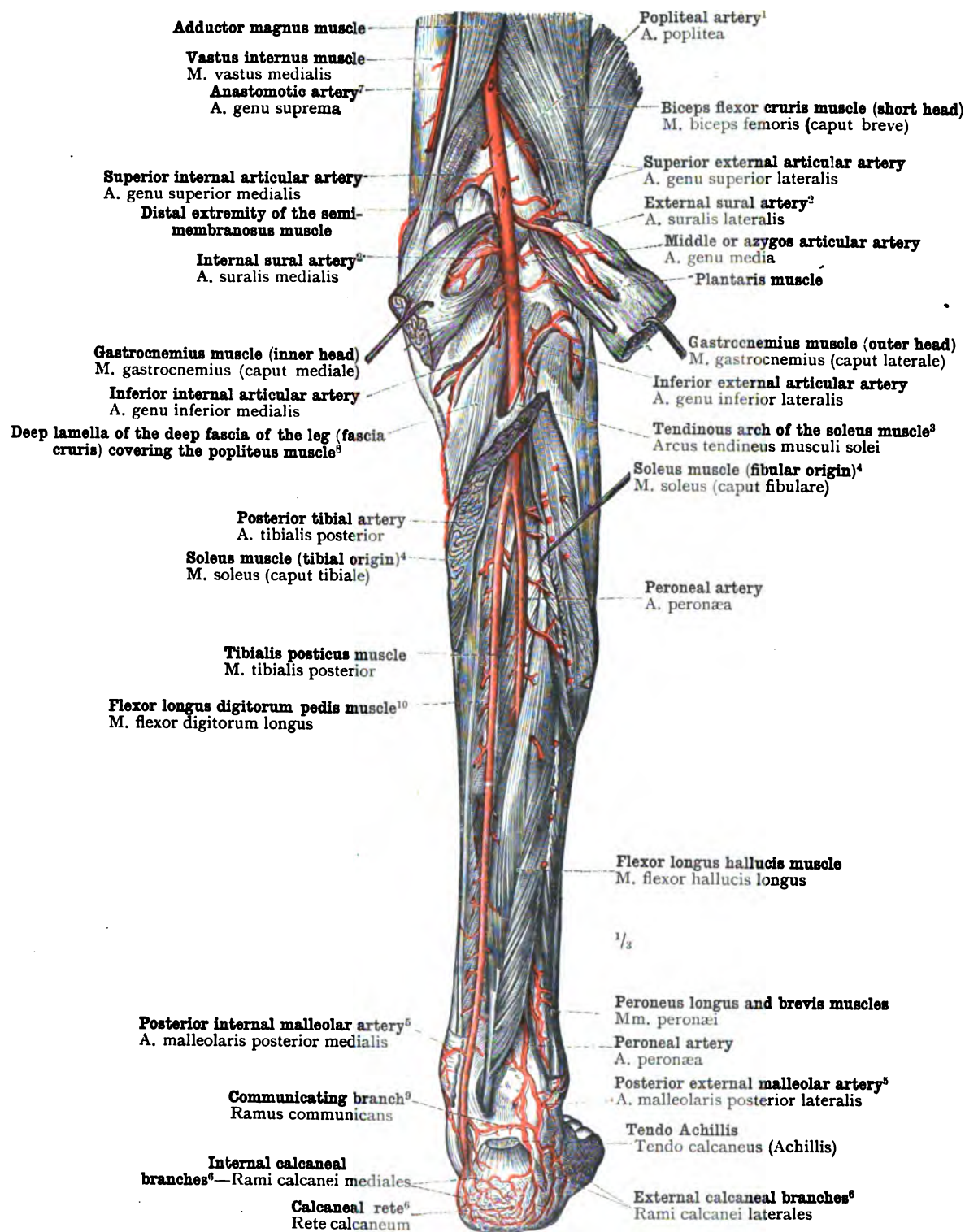
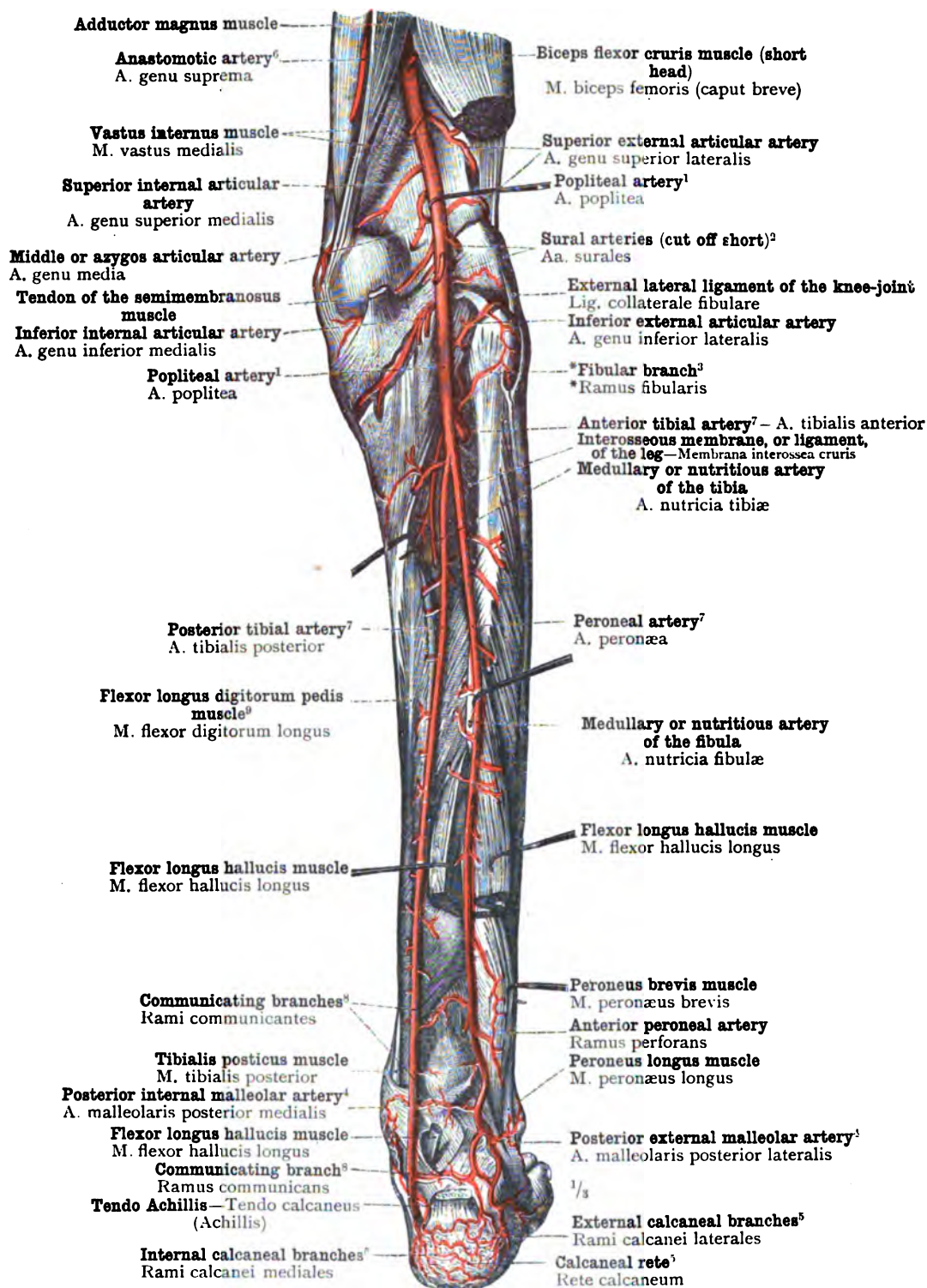
<sup>1</sup> See Appendix, note 245.<sup>2</sup> See Appendix, note 232.<sup>3</sup> See note 7 to p. 363 in Part III.<sup>4</sup> See Appendix, note 246.<sup>5</sup> See Appendix, note 236.<sup>6</sup> See Appendix, note 242.<sup>7</sup> See Appendix, note 226.<sup>8</sup> See Appendix, note 244.<sup>9</sup> See Appendix, note 247.<sup>10</sup> Or *flexor perforans* muscle.

FIG. 1046.—THE POPLITEAL ARTERY, ARTERIA POPLITEA; ITS PASSAGE THROUGH THE \*POPLITEAL CANAL, CANALIS POPLITEUS (see Appendix, note 245); THE POSTERIOR TIBIAL ARTERY AND THE PERONEAL ARTERY. RIGHT LEG AND FOOT, SEEN FROM BEHIND.





<sup>1</sup> See Appendix, note 245.  
<sup>6</sup> See Appendix, note 226.

<sup>2</sup> See Appendix, note 232.  
<sup>7</sup> See Appendix, note 242.

<sup>3</sup> See Appendix, note 248.  
<sup>8</sup> See Appendix, note 247.

<sup>4</sup> See Appendix, note 236.  
<sup>9</sup> Or *flexor perforans* muscle.

<sup>5</sup> See Appendix, note 222.

FIG. 1047.—THE ARTICULAR BRANCHES OF THE POPLITEAL ARTERY; THE ORIGIN OF THE ANTERIOR TIBIAL ARTERY (see Appendix, note 249); THE MEDULLARY OR NUTRITIVE ARTERIES OF THE TIBIA AND THE FIBULA, ARTERIÆ NUTRICIÆ TIBIÆ ET FIBULÆ; THE TERMINAL DIVISION OF THE PERONEAL ARTERY. RIGHT LEG AND FOOT, SEEN FROM BEHIND.

#### Arteries of the Back of the Leg.

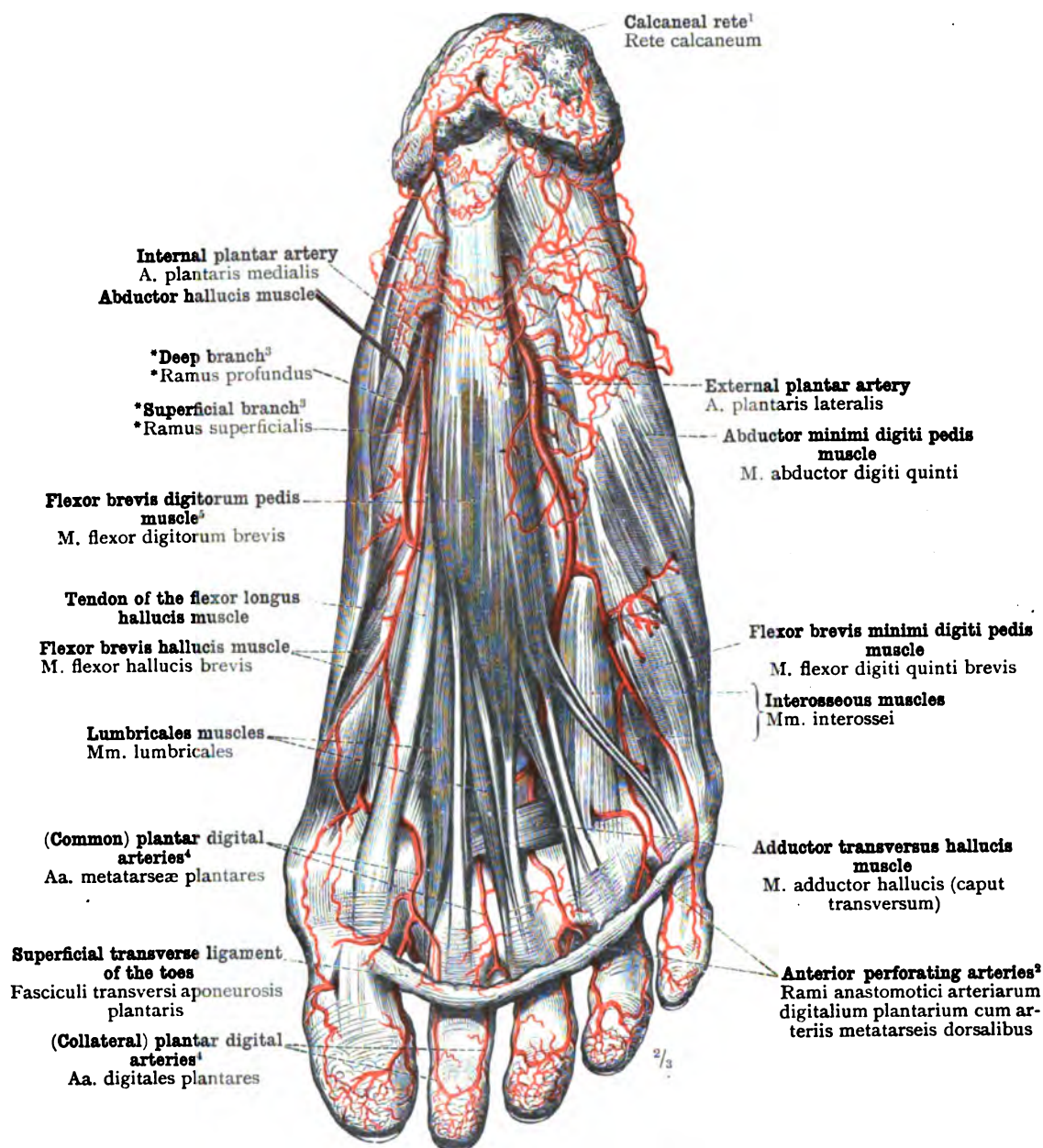
<sup>1</sup> See Appendix, note <sup>242</sup>.<sup>2</sup> See Appendix, note <sup>241</sup>.<sup>3</sup> See Appendix, note <sup>250</sup>.<sup>4</sup> See Appendix, note <sup>251</sup>.<sup>5</sup> Or *flexor perforatus* muscle.

FIG. 1048.—SUPERFICIAL ARTERIES OF THE SOLE OF THE FOOT: THE CALCANEAL RETE, RETE CALCANEUM (see Appendix, note <sup>242</sup>), AND PART OF THE PLANTAR RETE (see Appendix, note <sup>243</sup>); THE EXTERNAL PLANTAR ARTERY, ARTERIA PLANTARIS LATERALIS, AND ITS SUPERFICIAL DISTRIBUTION; THE INTERNAL PLANTAR ARTERY, ARTERIA PLANTARIS MEDIALIS, AND ITS DIVISION INTO \*SUPERFICIAL AND \*DEEP BRANCHES, \*RAMUS SUPERFICIALIS ET \*RAMUS PROFUNDUS (see Appendix, note <sup>250</sup>); THE (COMMON) PLANTAR DIGITAL ARTERIES, ARTERIÆ METATARSEÆ PLANTARES (see Appendix, note <sup>251</sup>); THE (COLLATERAL) PLANTAR DIGITAL ARTERIES, ARTERIÆ DIGITALES PLANTARES (see Appendix, note <sup>251</sup>), AND THE ANTERIOR PERFORATING ARTERIES (see Appendix, note <sup>241</sup>). PLANTAR ASPECT OF THE RIGHT FOOT.

The deep fascia of the sole or plantar fascia (aponeurosis plantaris) was removed, except for the superficial transverse ligament of the toes (fasciculi transversi aponeurosis plantaris); in the heel, the subcutaneous pad of fat was left intact.

#### Arteries of the Sole of the Foot.



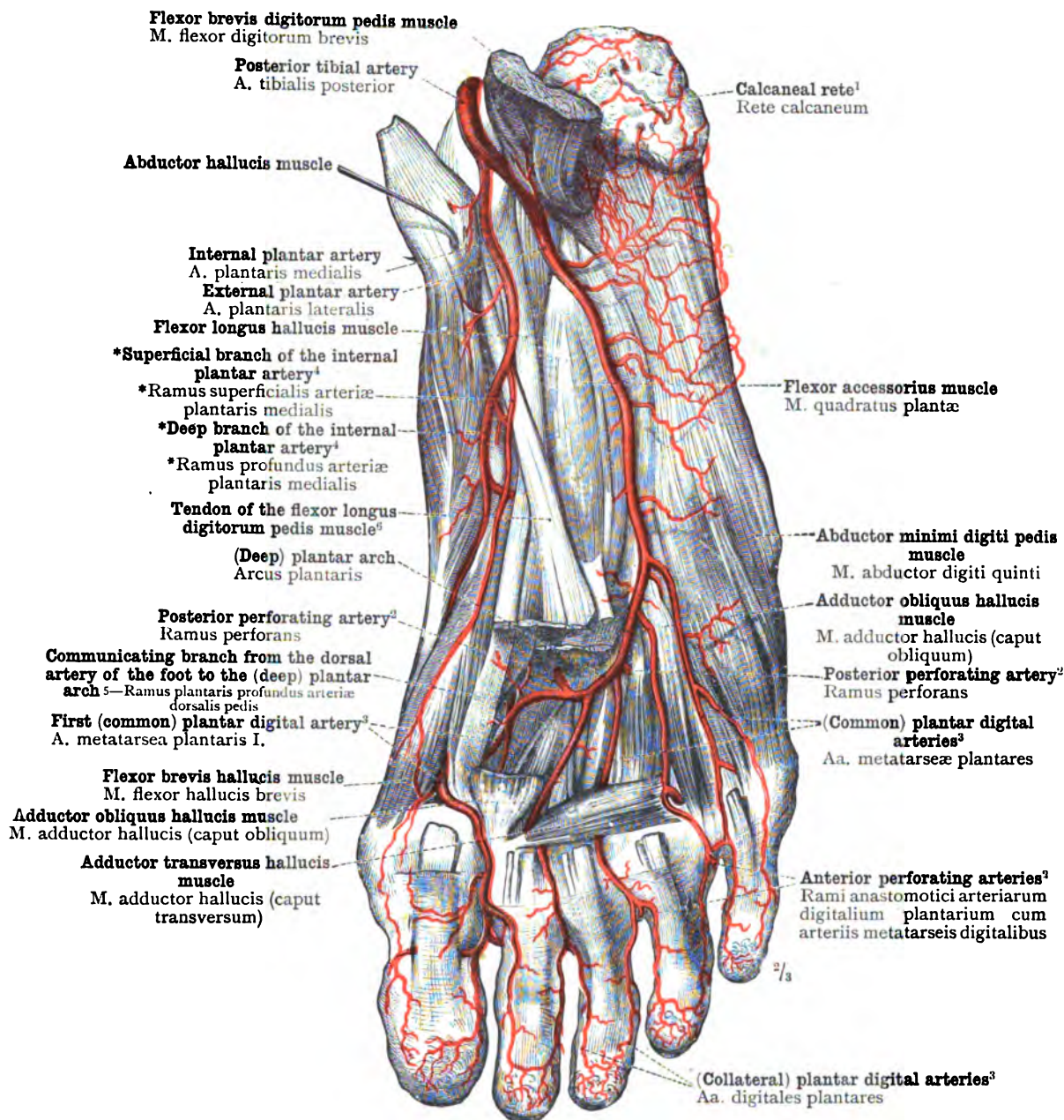


FIG. 1049.—DEEP ARTERIES OF THE SOLE OF THE FOOT: THE (DEEP) PLANTAR ARCH<sup>7</sup>; THE COMMON<sup>3</sup> AND THE COLLATERAL<sup>3</sup> PLANTAR DIGITAL ARTERIES.

In the preparation shown in Fig. 1048, in order to expose fully the two terminal branches of the posterior tibial artery, the abductor hallucis muscle was detached from the os calcis and turned outwards, the short flexor of the toes was cut across near its hinder extremity, its proximal segment being turned backwards, and its distal segment cut away as far forward as the heads of the metatarsal bones. After the partial removal of the tendons of the long flexor of the toes and of the long flexor of the great toe as well as of the adductor obliquus hallucis, the (deep) plantar arch was exposed, together with the posterior perforating and the (common) plantar digital arteries.

<sup>1</sup> See Appendix, note 242.

<sup>2</sup> See Appendix, note 241.

<sup>3</sup> See Appendix, note 251.

<sup>4</sup> See Appendix, note 250.

<sup>5</sup> Or first posterior perforating artery—see Appendix, note 241.

<sup>6</sup> Or flexor perforans muscle.

<sup>7</sup> (Deep) Plantar Arch.—This is most commonly spoken of as the *plantar arch*, without qualification. Toldt also calls it simply *arcus (arteriosus) plantaris*. Some authorities, however, describe also a *superficial plantar arch*. (See Appendix, note 250.)—T.R.

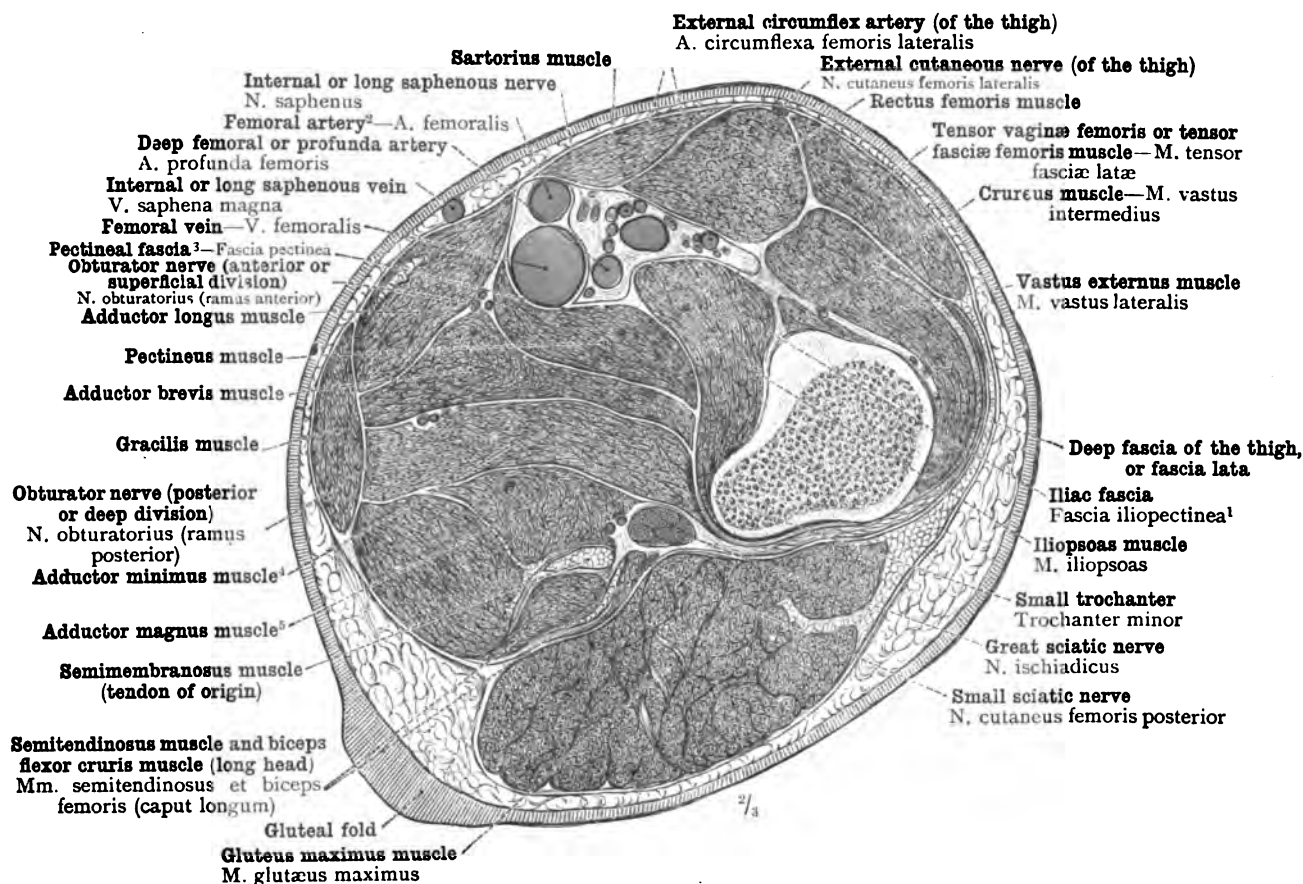


FIG. 1050.—TRANSVERSE SECTION THROUGH THE RIGHT THIGH AT THE LEVEL OF THE SMALL TROCHANTER ; UPPER SURFACE OF LOWER SEGMENT.

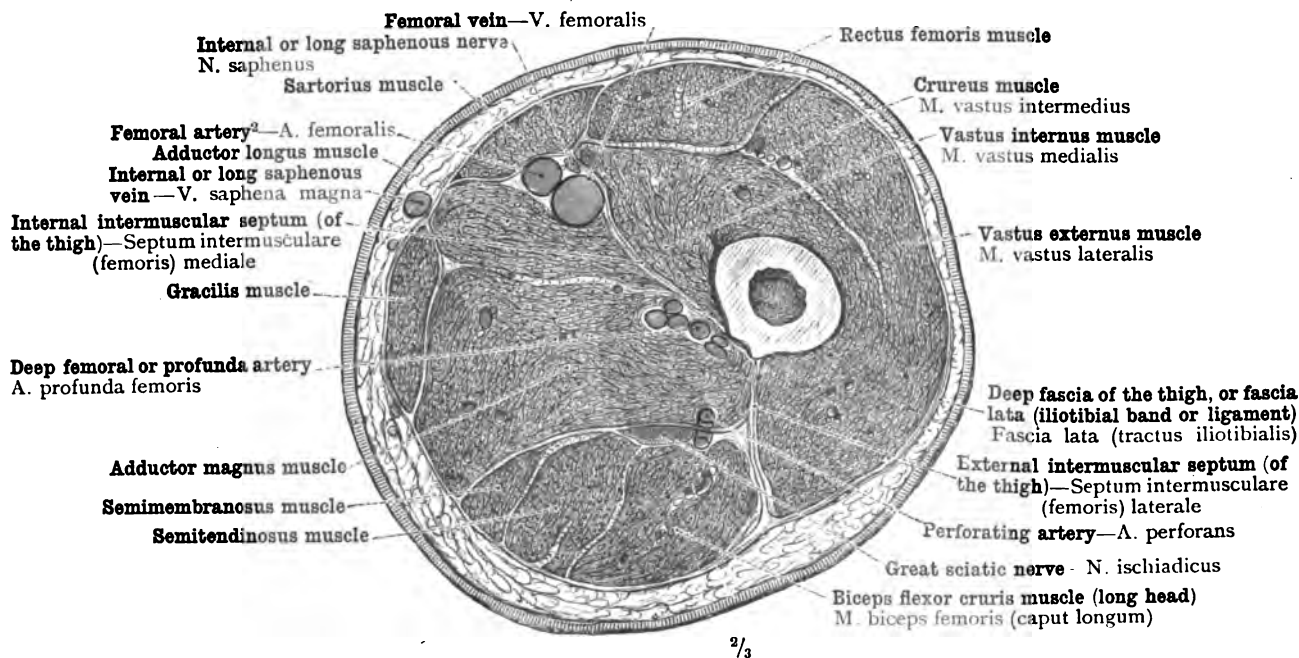


FIG. 1051.—TRANSVERSE SECTION THROUGH THE RIGHT THIGH, A LITTLE ABOVE THE MIDDLE ; UPPER SURFACE OF LOWER SEGMENT.

<sup>1</sup> See Appendix, note 252.

<sup>4</sup> See note <sup>2</sup> to p. 644.

<sup>2</sup> See Appendix, note 223.

<sup>3</sup> See Appendix, note 253.

<sup>5</sup> See Appendix, note 231.



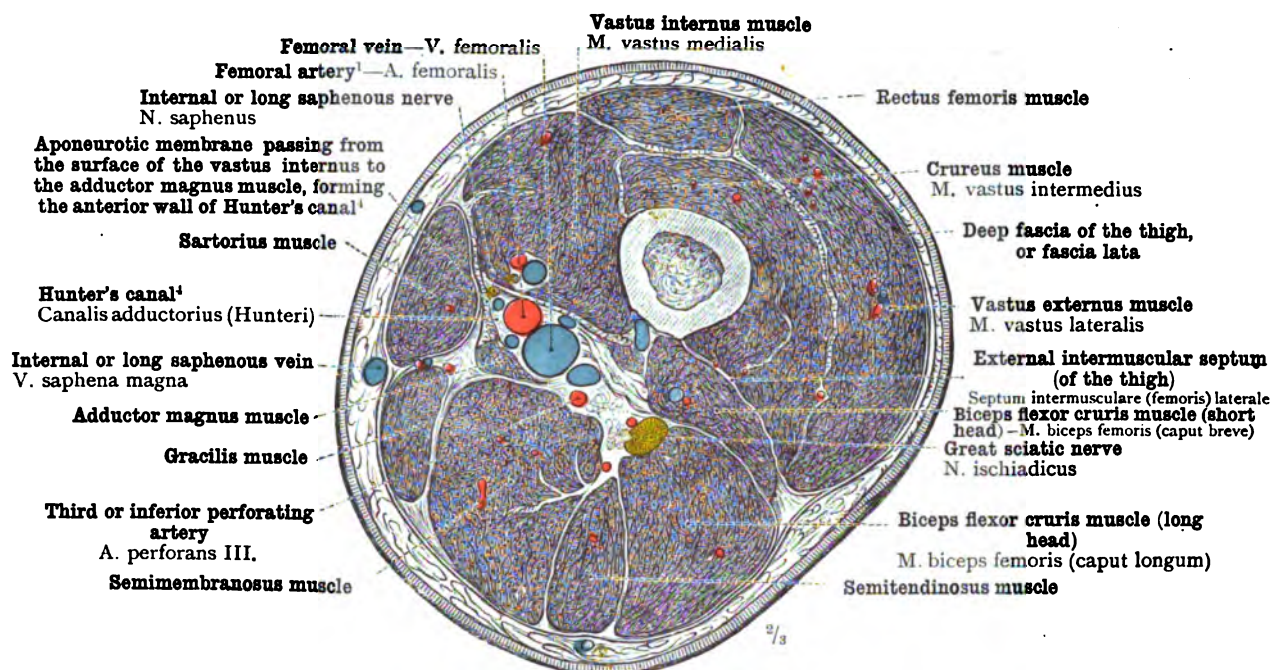


FIG. 1052.—TRANSVERSE SECTION THROUGH THE RIGHT THIGH, A LITTLE ABOVE THE OPENING IN THE ADDUCTOR MAGNUS MUSCLE THROUGH WHICH THE FEMORAL VESSELS PASS INTO THE POPLITEAL SPACE (HIATUS ADDUCTORIUS HUNTERI); UPPER SURFACE OF LOWER SEGMENT.

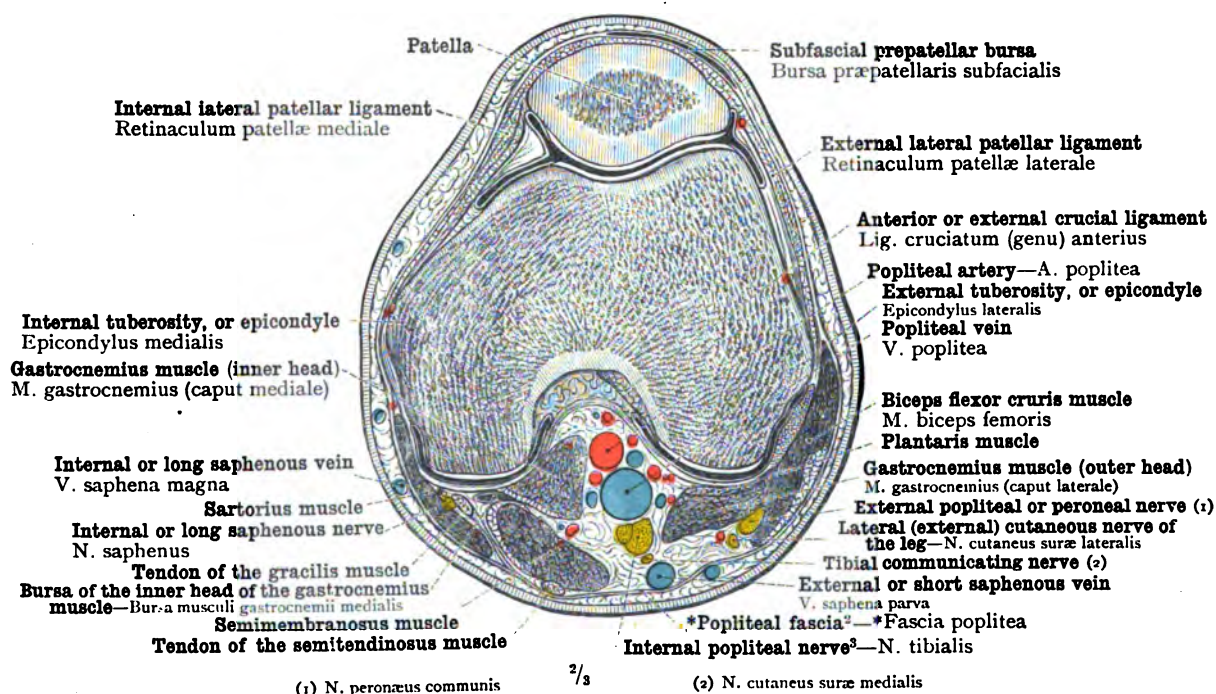


FIG. 1053.—TRANSVERSE SECTION THROUGH THE RIGHT KNEE, PASSING THROUGH THE MIDDLE OF THE PATELLA; UPPER SURFACE OF LOWER SEGMENT.

<sup>1</sup> See Appendix, note <sup>223</sup>.  
<sup>2</sup> \*Popliteal Fascia.—The name of fascia poplitea is given by the author to that portion of the deep fascia of the lower extremity which forms the roof of the popliteal space. The name is not used by Quain or Macalister.—Tr.  
<sup>3</sup> See Appendix, note <sup>234</sup>.  
<sup>4</sup> See Appendix, note <sup>228</sup>.

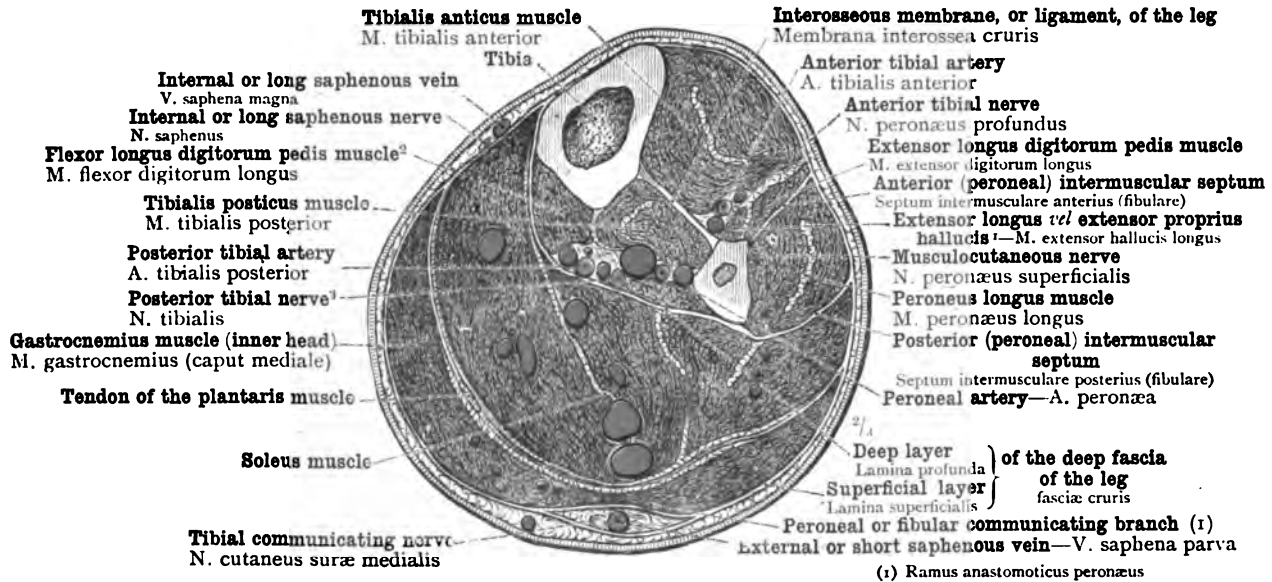


FIG. 1054.—TRANSVERSE SECTION THROUGH THE RIGHT LEG, A LITTLE ABOVE THE MIDDLE; UPPER SURFACE OF LOWER SEGMENT.

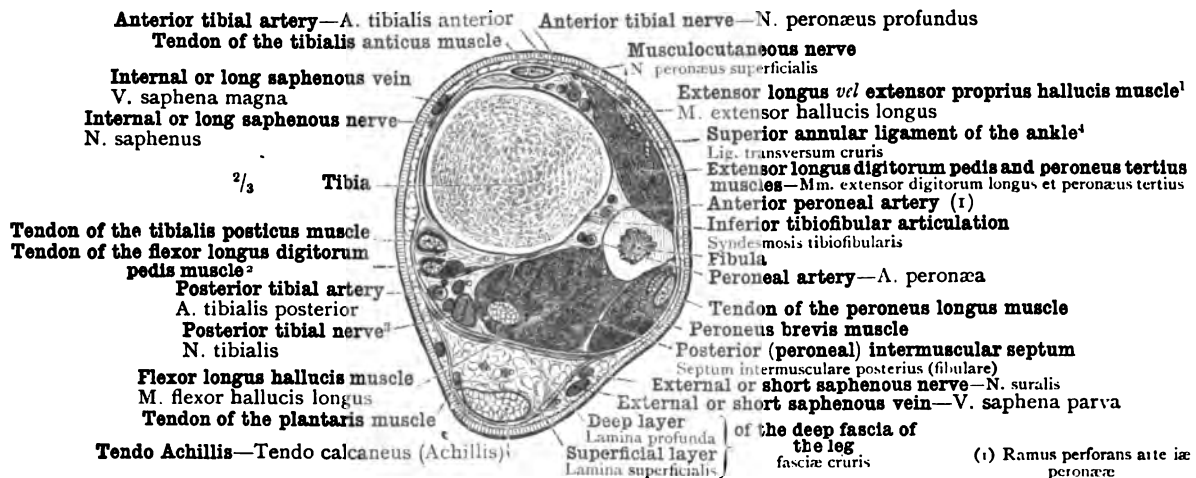


FIG. 1055.—TRANSVERSE SECTION THROUGH THE RIGHT LEG, JUST ABOVE THE ANKLE-JOINT; UPPER SURFACE OF LOWER SEGMENT.

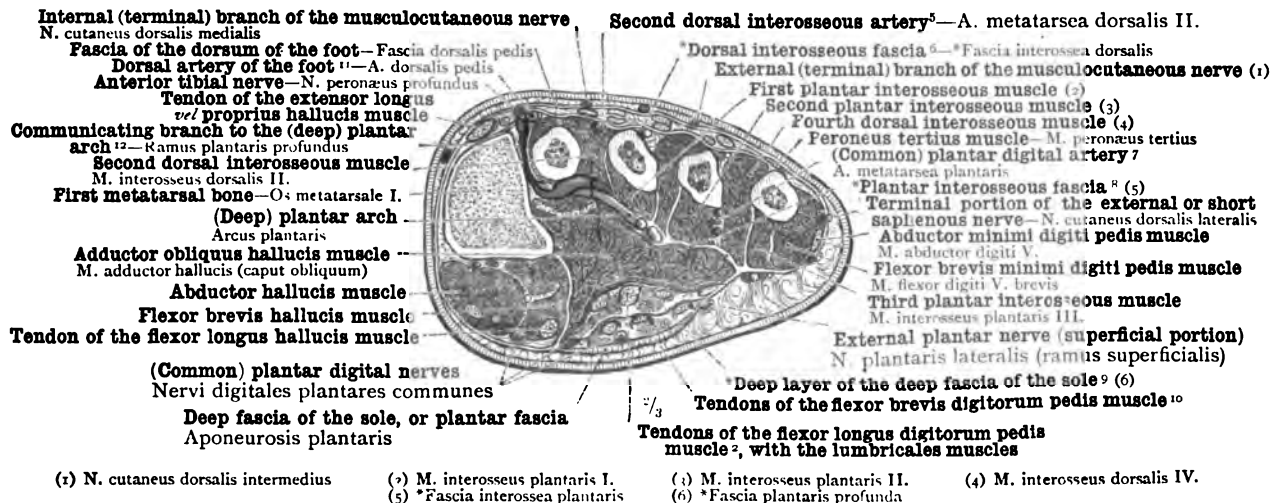


FIG. 1056.—CORONAL SECTION THROUGH THE RIGHT FOOT, PASSING THROUGH THE MIDDLE OF THE FIRST METATARSAL BONE; SURFACE OF DISTAL SEGMENT.

<sup>1</sup> Regarding the nomenclature of this muscle, see note 2 to p. 364, in Part III.

<sup>3</sup> See Appendix, note 254.

<sup>5</sup> See Appendix, note 237.

<sup>8</sup> See Appendix, note 255.

<sup>11</sup> Often known in England by its Latin name of *dorsalis pedis artery*.

<sup>4</sup> Known also as the *upper band of the anterior annular ligament of the ankle*.

<sup>6</sup> See Appendix, note 255.

<sup>9</sup> See Appendix, note 257.

<sup>2</sup> Or *flexor perforans muscle*.

<sup>7</sup> See Appendix, note 257.

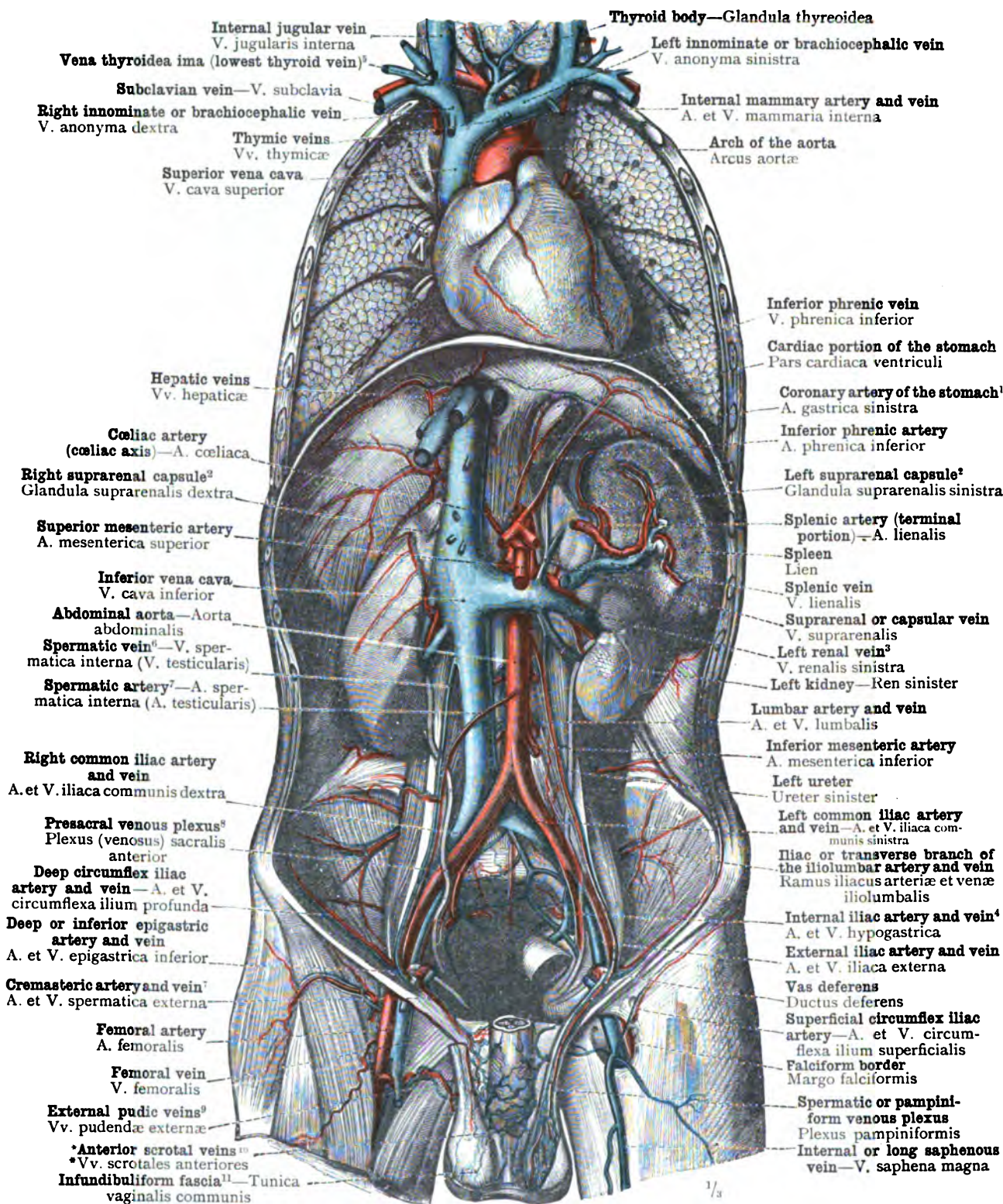
<sup>10</sup> Or *flexor perforatus muscle*.

<sup>12</sup> See Appendix, note 240.



VENÆ TRUNCI

THE VEINS OF THE TRUNK

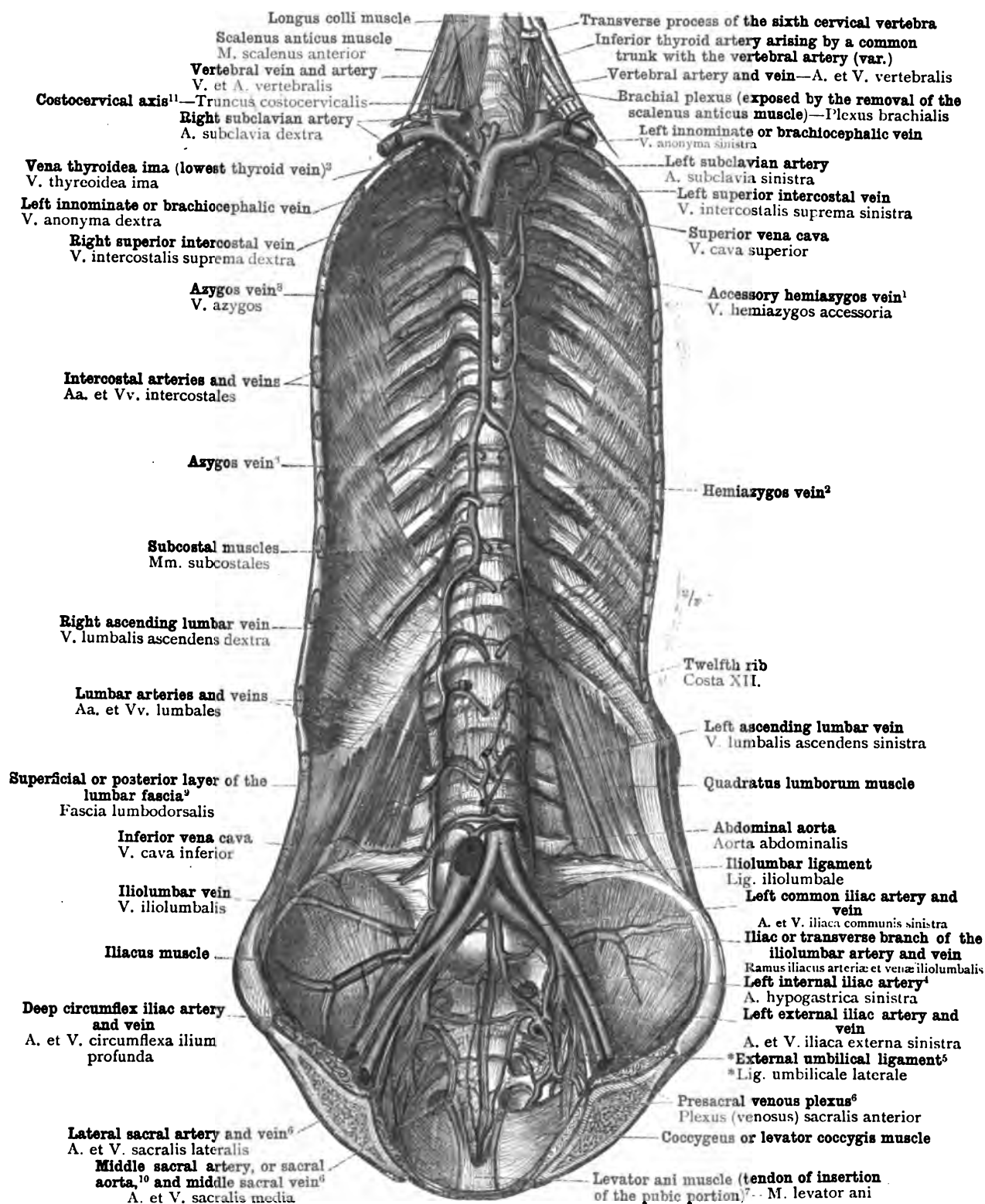


- <sup>1</sup> Called by Macalister the *gastric artery*.  
<sup>2</sup> Sometimes called the *emulgent veins*. See note <sup>3</sup> to p. 595.  
<sup>3</sup> Companion to the *thyroidea ima artery*. See note <sup>1</sup> to p. 500.  
<sup>4</sup> This vein is called by the author *vena spermatica interna* to distinguish it from the *vena spermatica externa*—the *cremasteric vein* of English anatomists.—Tr.  
<sup>5</sup> See Appendix, note <sup>129</sup>.  
<sup>6</sup> Called by Macalister the *pubic veins*. See note on nomenclature of corresponding arteries (note <sup>5</sup> to p. 599).  
<sup>7</sup> See Appendix, note <sup>133</sup>.  
<sup>8</sup> See Appendix, note <sup>85</sup>.  
<sup>9</sup> See Appendix to Part IV., note <sup>68</sup>.  
<sup>10</sup> See Appendix, note <sup>133</sup>.  
<sup>11</sup> See Appendix, note <sup>120</sup>.

FIG. 1057.—THE SUPERIOR AND THE INFERIOR VENA CAVA; THE PARIETAL AND THE VISCERAL TRIBUTARIES, RADICES PARIETALES ET VISCERALES, OF THE LATTER. THE ABDOMINAL AORTA, AORTA ABDOMINALIS. SEEN FROM BEFORE.

### The System of the Superior and the Inferior Venæ Cavæ.



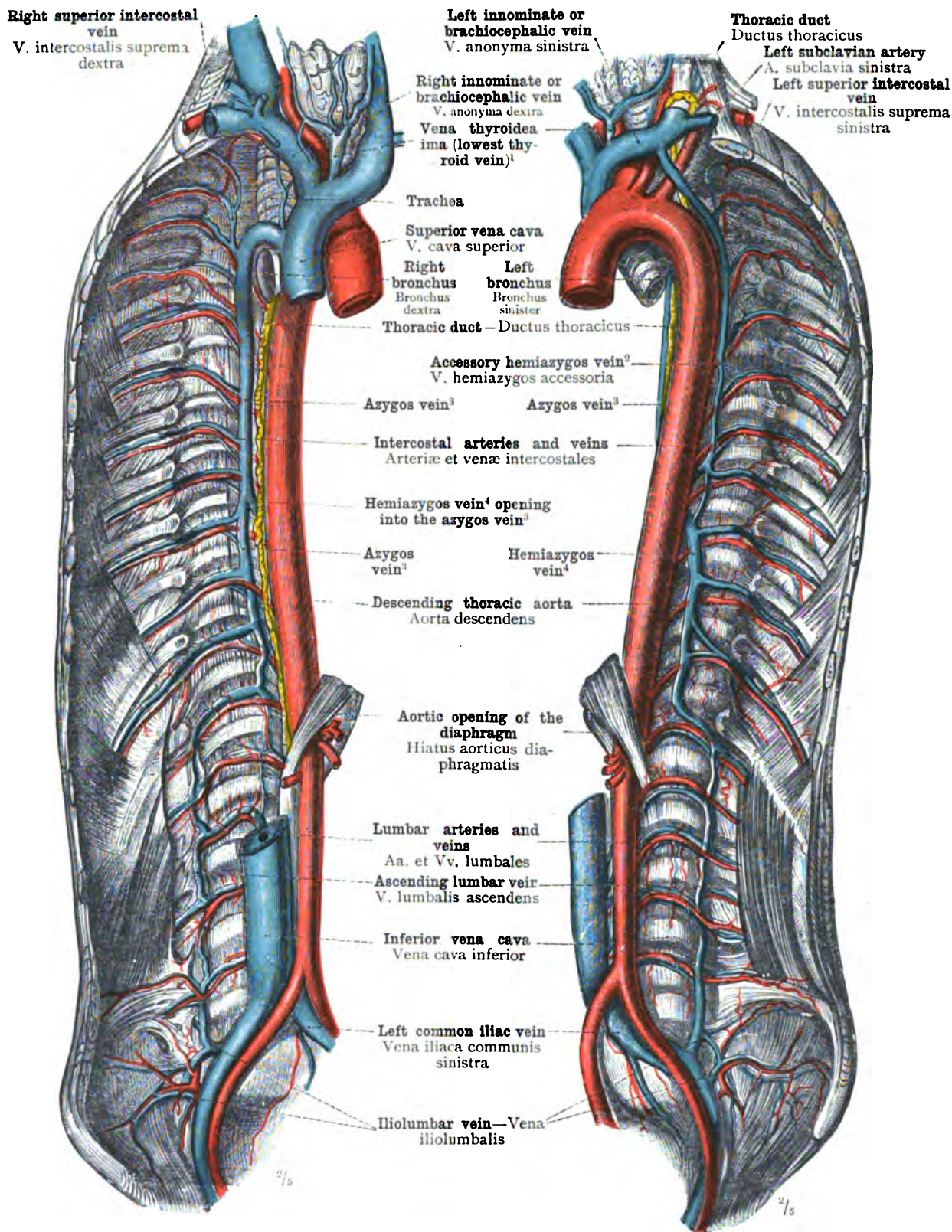


<sup>1</sup> Called also the *left upper azygos vein*.  
<sup>2</sup> Companion to the *thyroidea ima artery*. See note <sup>1</sup> to p. 599.  
<sup>3</sup> The remains of the obliterated *hypogastric artery* of the fetus.—See note <sup>4</sup> to p. 397, in Part III.  
<sup>4</sup> That portion of the levator ani muscle which is distinguished by Toldt as the *pars pubica* is by Savage called the *pubococcygeus muscle*. See note <sup>6</sup> to p. 529, in Part IV.  
<sup>5</sup> Called also the *right or large azygos vein*.  
<sup>6</sup> See Appendix, note 127.

<sup>7</sup> Known also as the *left lower or small azygos vein*.  
<sup>8</sup> See Appendix, note 120.  
<sup>9</sup> See Appendix, note 258.  
<sup>10</sup> See note <sup>1</sup> to p. 267 and note <sup>1</sup> to p. 285, in Part III.  
<sup>11</sup> See Appendix, note 177.

FIG. 1058.—THE VEINS ON THE INNER SURFACE OF THE POSTERIOR WALL OF THE TRUNK. SEEN FROM BEFORE.

### The System of the Azygos and Hemiazygos Veins.



<sup>1</sup> Companion to the *thyroidea ima* artery. See note <sup>1</sup> to p. 590.  
<sup>3</sup> Known also as the *right or large azygos vein*.

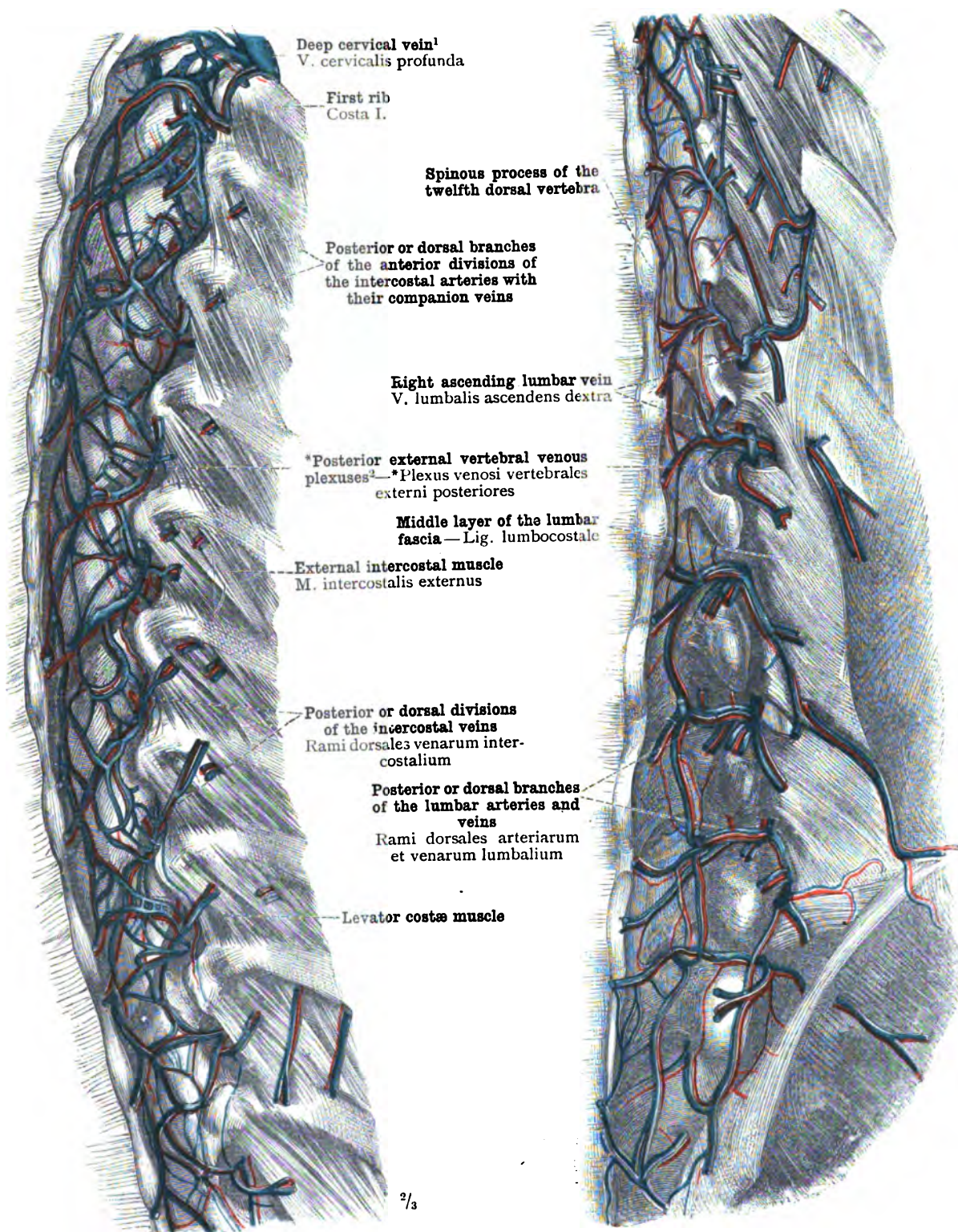
<sup>2</sup> Known also as the *left upper azygos vein*.  
<sup>4</sup> Known also as the *left lower or small azygos vein*.

FIG. 1059.—SEEN FROM THE RIGHT SIDE.

FIG. 1060.—SEEN FROM THE LEFT SIDE.

### The System of the Azygos and Hemiazygos Veins.





<sup>1</sup> Known also as the *posterior vertebral vein*.

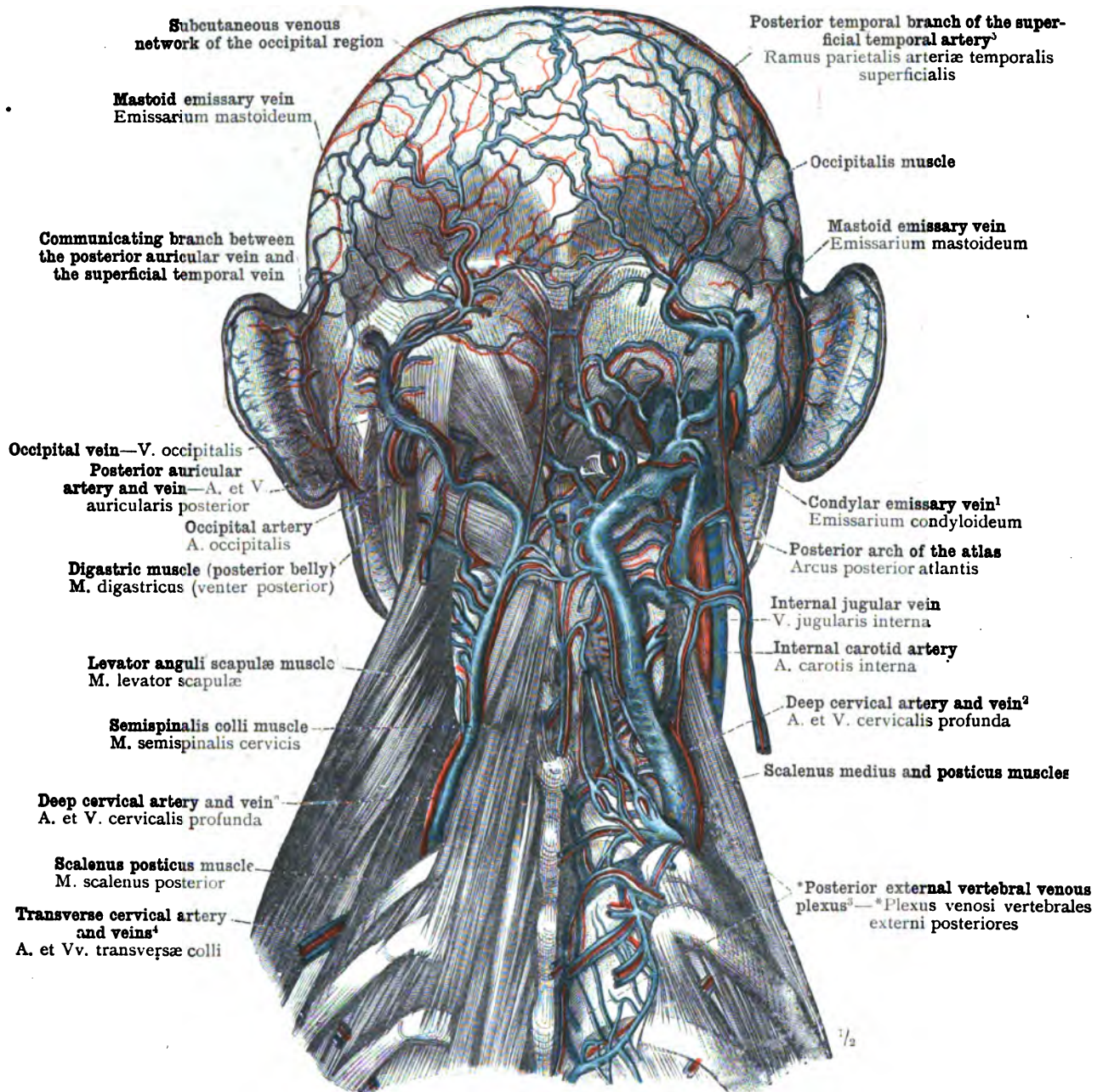
See Appendix, notes 259 and 260.

FIG. 1061.—\*POSTERIOR EXTERNAL VERTEBRAL VENOUS PLEXUS (see Appendix, notes 259 and 260) OF THE DORSAL REGION.

FIG. 1062.—\*POSTERIOR EXTERNAL VERTEBRAL VENOUS PLEXUS (see Appendix, notes 259 and 260) OF THE LUMBAR AND SACRAL REGIONS.

**Plexus venosi vertebrales externi posteriores**—The posterior external vertebral venous plexuses.





<sup>1</sup> See Appendix, note 261.  
<sup>3</sup> See Appendix, notes 259 and 260.  
<sup>5</sup> See Appendix note 168.

<sup>2</sup> The *deep cervical vein* is known also as the *posterior vertebral vein*.  
<sup>4</sup> See Appendix, note 262.

FIG. 1063.—THE VEINS OF THE OCCIPITAL REGION AND THE DEEP VEINS OF THE BACK OF THE NECK, SEEN FROM BEHIND: THE SUBCUTANEOUS VENOUS NETWORK OF THE OCCIPITAL REGION; THE OCCIPITAL VEIN, VENA OCCIPITALIS, CONTINUOUS BELOW WITH THE DEEP CERVICAL VEIN, VENA CERVICALIS PROFUNDA; THE MASTOID EMISSARY VEIN, EMISSARIUM MASTOIDEUM, AND THE CONDYLAR EMISSARY VEIN, EMISSARIUM CONDYLOIDEUM (see Appendix, note 261); THE \*POSTERIOR EXTERNAL VERTEBRAL VENOUS PLEXUS, \*PLEXUS VENOSI VERTEBRALES POSTERIORES (see Appendix, notes 259 and 260); THE POSTERIOR AURICULAR VEIN, VENA AURICULARIS POSTERIOR.

On the left side the levator anguli scapulae muscle was drawn outwards, and, after the removal of the complexus or semispinalis capitis muscle, the short posterior craniovertebral or suboccipital muscles and the semispinalis colli muscle were exposed. On the right side these muscles also were removed, and the \*posterior external vertebral venous plexus was thus laid bare.

### The Deep Veins of the Nuchal and Occipital Regions.



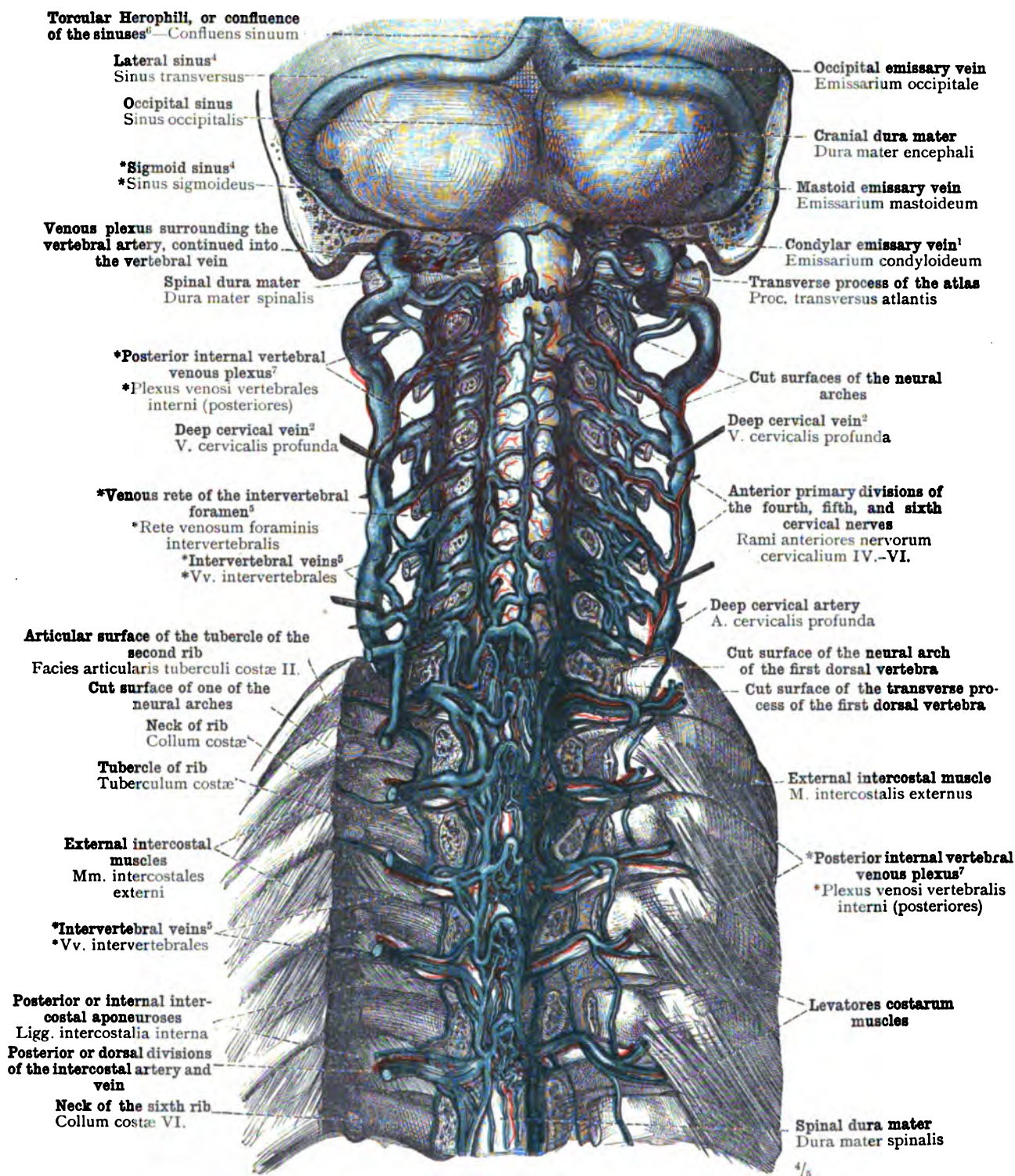


FIG. 1064.—\*INTERNAL VERTEBRAL VENOUS PLEXUS (see Appendix, notes <sup>259</sup> and <sup>263</sup>), LAID BARE FROM BEHIND BY OPENING THE SPINAL CANAL IN THE CERVICAL AND THE UPPER DORSAL PORTIONS OF THE VERTEBRAL COLUMN; THE CONNEXIONS OF THE PLEXUS WITH THE DEEP CERVICAL VEIN (see note <sup>3</sup> above) AND WITH THE INTERCOSTAL VEINS. THE VENOUS SINUSES OF THE CRANIUM (MENINGEAL SINUSES), SINUS DURÆ MATRIS.

<sup>1</sup> See Appendix, note <sup>261</sup>.

<sup>4</sup> See Appendix, note <sup>264</sup>.

<sup>7</sup> See Appendix, notes <sup>259</sup> and <sup>263</sup>.

<sup>2</sup> Known also as the posterior vertebral vein.

<sup>5</sup> See Appendix, note <sup>265</sup>.

<sup>3</sup> See Appendix, note <sup>263</sup>.

<sup>6</sup> See Appendix, note <sup>266</sup>.

Plexus venosi vertebrales interni—The \*internal vertebral venous plexus.—V. cervicalis profunda—The deep cervical vein.



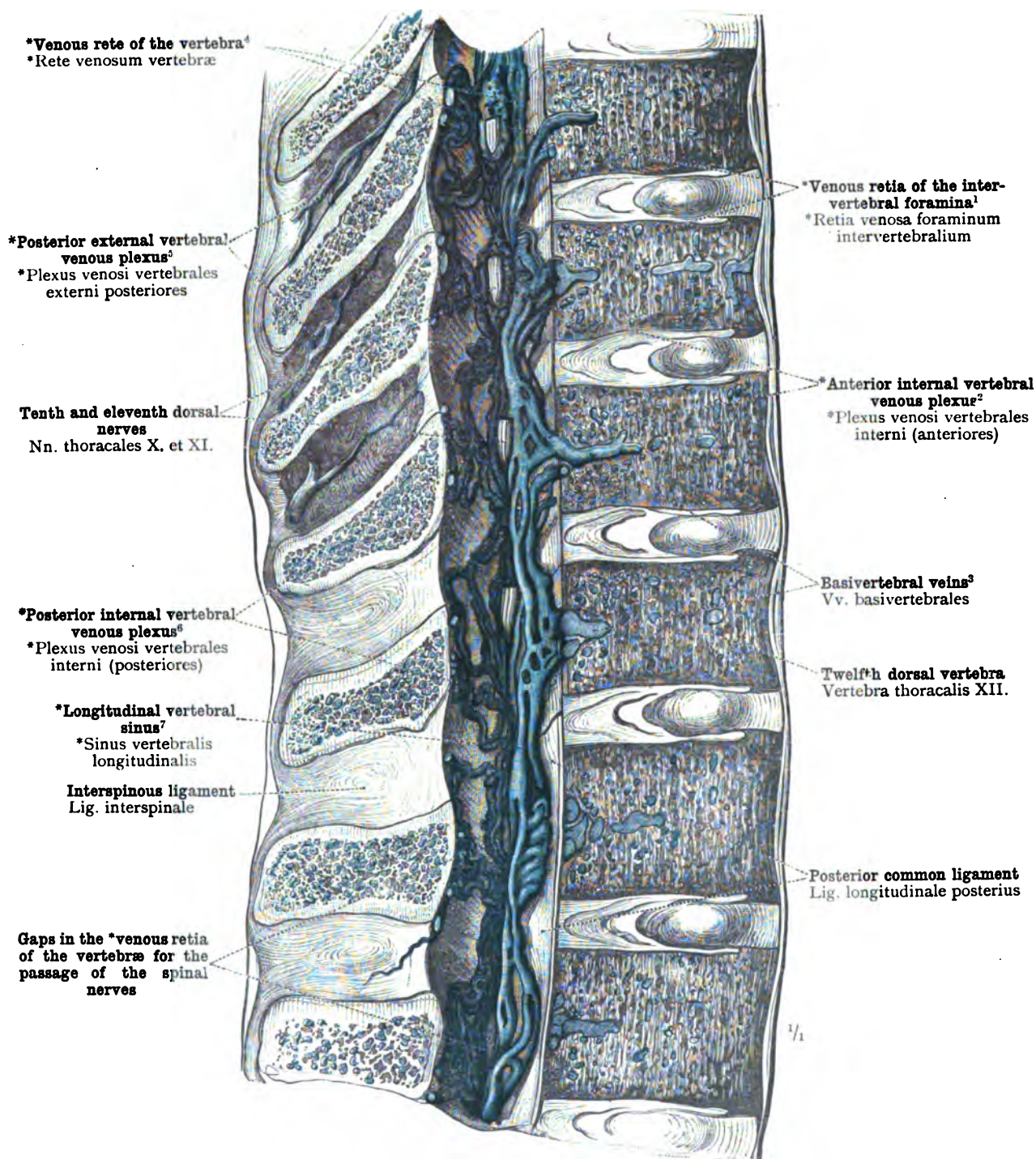
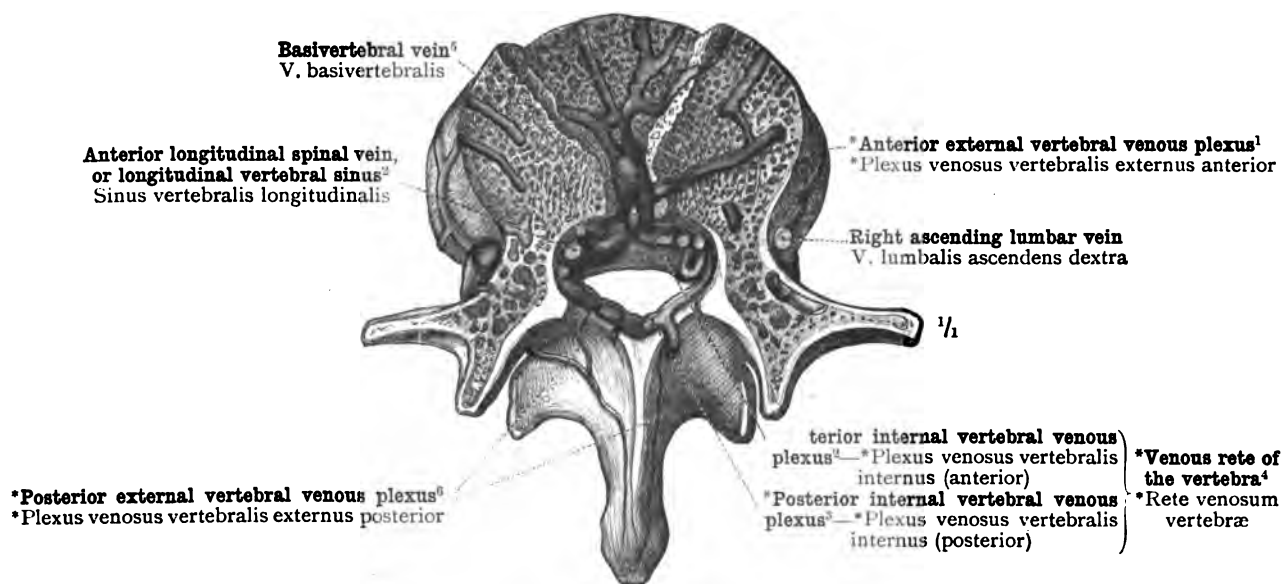
<sup>1</sup> See Appendix, note 265.<sup>2</sup> See Appendix, notes 259 and 267.<sup>3</sup> See Appendix, note 268.<sup>4</sup> See Appendix, note 269.<sup>5</sup> See Appendix, notes 259 and 260.<sup>6</sup> See Appendix, notes 259 and 263.<sup>7</sup> Or anterior longitudinal spinal vein. See Appendix, notes 260 and 267.

FIG. 1065.—THE \*INTERNAL VERTEBRAL VENOUS PLEXUSES, \*PLEXUS VENOSI VERTEBRALES INTERNI (see Appendix, notes 259 and 263), DISPLAYED IN THE LEFT HALF OF A MEDIAN SAGITTAL SECTION THROUGH THE FOUR LOWERMOST DORSAL AND THE TWO UPPERMOST LUMBAR VERTEBRÆ; THEIR CONNEXION WITH THE BASIVERTEBRAL VEINS, VV. BASIVERTEBRALES (see Appendix, note 260), AND THEIR RELATION TO THE EMERGING ROOTS OF THE SPINAL NERVES.

The posterior common ligament was removed from the dorsal vertebrae, but left intact on the lumbar vertebrae. Between the spinous processes of the eighth, ninth, and tenth dorsal vertebrae, by the removal of the interspinous ligaments, portions of the \*posterior external vertebral venous plexus have also been exposed.

**Plexus venosi vertebrales interni—The internal vertebral venous plexus.**





<sup>1</sup> \*Anterior External Vertebral Venous Plexus.—Quain calls the veins that combine to form this plexus the *external veins of the bodies of the vertebrae*. According to Von Langer and Toldt, the *plexus venosi vertebrales externi anteriores* are not equally developed throughout the spine, being found only in the cervical and sacral regions. (See also Appendix, note 259.)—Tr.

<sup>2</sup> See Appendix, notes 259 and 27.

<sup>5</sup> See Appendix, note 268.

<sup>3</sup> See Appendix, notes 259 and 261.

<sup>6</sup> See Appendix, notes 259 and 260.

<sup>4</sup> See Appendix, note 269.

FIG. 1066.—THE BASIVERTEBRAL VEINS, VENÆ BASIVERTEBRALES, THEIR CONNEXION WITH THE \*ANTERIOR INTERNAL AND THE \*ANTERIOR EXTERNAL VERTEBRAL VENOUS PLEXUSES, \*PLEXUS VENOSI VERTEBRALES ANTERIORES; AND THE \*VENOUS RETE OF THE VERTEBRA, RETE VENOSUM VERTEBRÆ, A SEGMENTAL PORTION OF THE \*ANTERIOR INTERNAL AND \*POSTERIOR INTERNAL VERTEBRAL VENOUS PLEXUS, \*PLEXUS VENOSI VERTEBRALES INTERNI; SEEN FROM ABOVE IN A HORIZONTAL SECTION THROUGH A LUMBAR VERTEBRA.

In order to bring into view the ramifications of the basivertebral veins at different levels, a part of the substance of the body of the vertebra was cut away below the general level of the section.

Vv. basivertebrales—The basivertebral veins.—Plexus venosi vertebrales—The vertebral venous plexuses.

Cutaneous offsets of the superficial cervical artery<sup>2</sup>  
 Rami cutanei arteriæ cervicalis superficialis  
 Cutaneous offsets of the suprascapular artery<sup>4</sup>—Rami cutanei arteriæ transversæ scapulæ

Cutaneous offset of the posterior circumflex artery (of the arm) (1)  
 Cutaneous offset of the dorsal branch of the subscapular artery<sup>6</sup>—Ramus cutaneus arteriæ circumflexæ scapulæ

(Outer) dorsal cutaneous branches of the intercostal and lumbar arteries—Rami cutanei dorsales (laterales) arteriarum intercostalium et lumbalium

Lateral cutaneous branches of the intercostal arteries<sup>3</sup>  
 Rami cutanei laterales arteriarum intercostalium

Cutaneous offsets of the gluteal artery  
 Rami cutanei arteriæ glutææ superioris

Cutaneous offsets of the sciatic artery  
 Rami cutanei arteriæ glutææ inferioris

Cutaneous offset of the first or superior perforating artery  
 Ramus cutaneus arteriæ perforantis primæ

(Inner) dorsal cutaneous branches of the intercostal arteries—Rami cutanei dorsales (mediales) arteriarum intercostalium

(Inner) dorsal cutaneous branches of the lumbar arteries  
 Rami cutanei dorsales (mediales) arteriarum lumbalium

Cutaneous offsets of the dorsal branches of the lateral sacral arteries

$\frac{1}{3}$

Cutaneous offsets of the inferior hæmorrhoidal artery<sup>1</sup> (which is itself a branch of the internal pudic artery)<sup>2</sup>

(1) Rami cutanei arteriæ circumflexæ humeri posterioris

<sup>1</sup> Called by Macalister the *anal artery*.

<sup>2</sup> See Appendix, note 139.

<sup>3</sup> Regarding the author's use of the term *arteria cervicalis superficialis*, see Appendix, notes 131, 135, 172, and 208.

<sup>4</sup> Called also the *transverse scapular* or *transverse humeral artery*.

<sup>5</sup> Known also as the *lateral perforating branches*. See note <sup>1</sup> to p. 589.

<sup>6</sup> Or *dorsalis scapulæ artery*.

FIG. 1067.—THE SUBCUTANEOUS ARTERIES AND VEINS OF THE POSTERIOR WALL OF THE TRUNK.

The Subcutaneous Bloodvessels of the Posterior Wall of the Trunk.



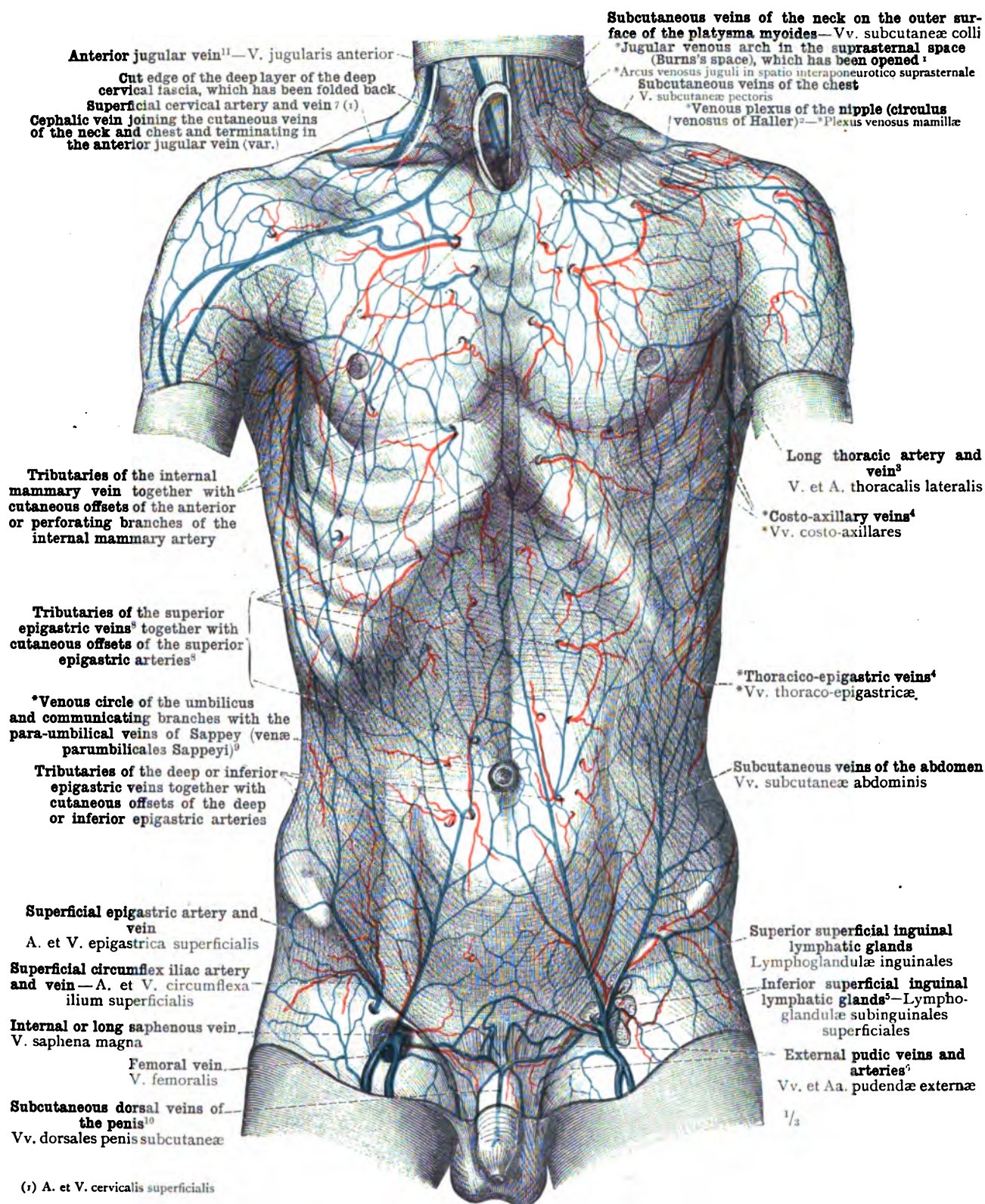
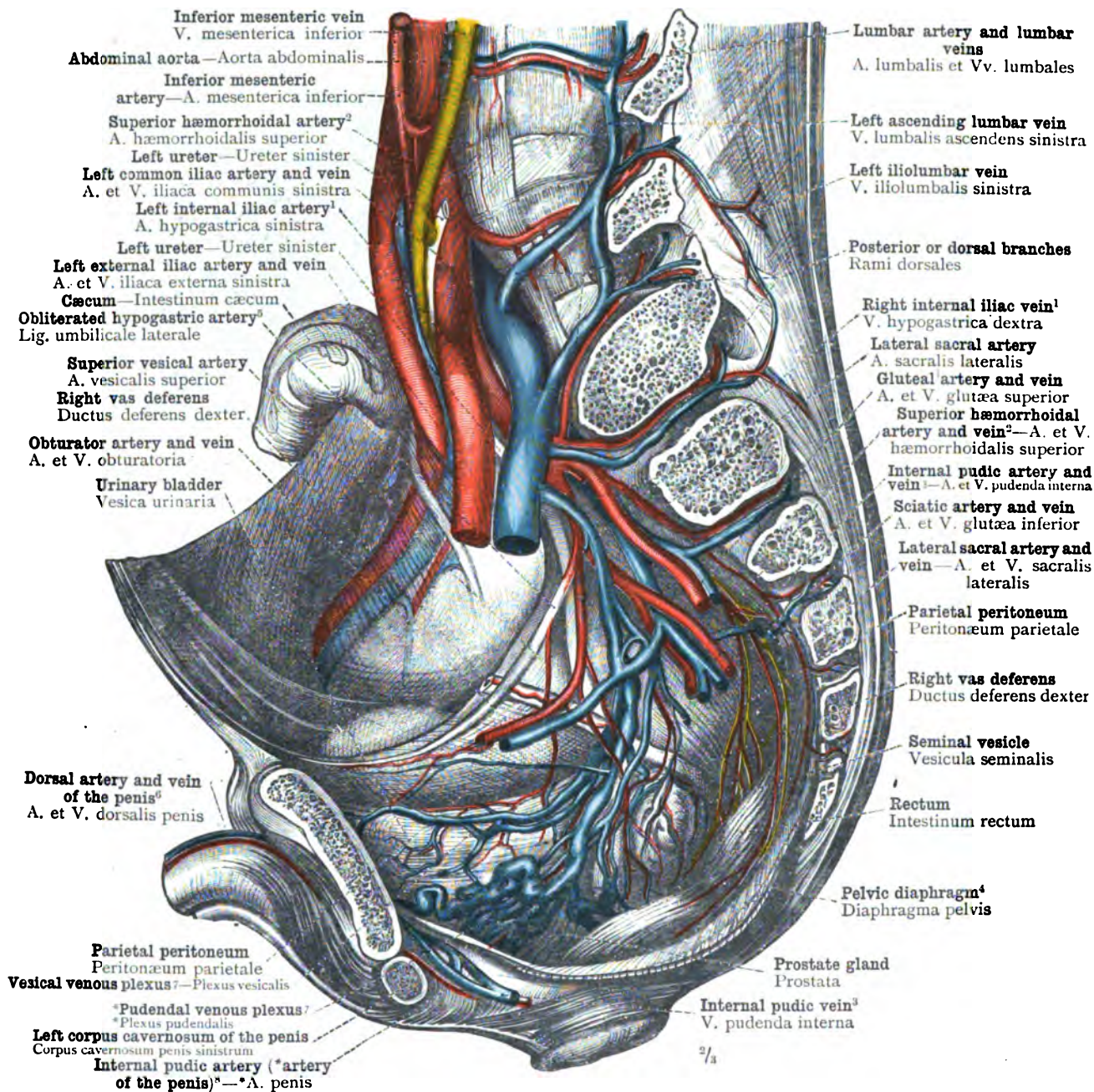
<sup>1</sup> See Appendix, note 123.<sup>4</sup> See Appendix, note 271.<sup>7</sup> See Appendix, notes 134, 135, 172, and 208.<sup>8</sup> The superior epigastric vessels are known also as the abdominal branches of the internal mammary vessels.<sup>9</sup> See Appendix, note 273.<sup>2</sup> See Appendix, note 270.<sup>5</sup> Often called the femoral lymphatic glands.<sup>10</sup> See Appendix, note 274.<sup>3</sup> Known also as the external mammary artery and vein.<sup>6</sup> See Appendix, note 272.<sup>11</sup> See Appendix, note 197.

FIG. 1068.—THE SUBCUTANEOUS ARTERIES AND VEINS OF THE ANTERIOR WALL OF THE TRUNK.

## The Subcutaneous Bloodvessels of the Anterior Wall of the Trunk.





<sup>1</sup> See Appendix, note 120. <sup>2</sup> Called by Macalister the *superior rectal artery and vein*.  
<sup>3</sup> Regarding the nomenclature of the *internal pudic artery*, see Appendix, note 132. The same considerations apply to the nomenclature of the companion *vein*.—Tr.  
<sup>4</sup> See Appendix, note 140. <sup>5</sup> Or *external umbilical ligament*. See Appendix, note 140.  
<sup>6</sup> See Appendix, note 274. <sup>7</sup> See Appendix, note 73. <sup>8</sup> See Appendix, note 142.

FIG. 1069.—THE VENOUS PLEXUSES OF THE MALE PELVIS; SEEN FROM THE LEFT SIDE.

By a section, which began in front a little to the left of the median plane, and behind passed through the left row of sacral foramina, the left lateral wall of the pelvis was removed, the parietal peritoneum covering this wall being, however, retained up to the level of its reflection on to the urinary bladder and the rectum. The extraperitoneal portions of these organs were exposed, together with the vessels by which they are surrounded; the pelvic diaphragm (see *Appendix, note 140*) was cut away close to the rectum and the bladder and drawn slightly downwards. The inferior mesenteric vein has been injected with a yellow material.

### The Veins of the Male Pelvis.



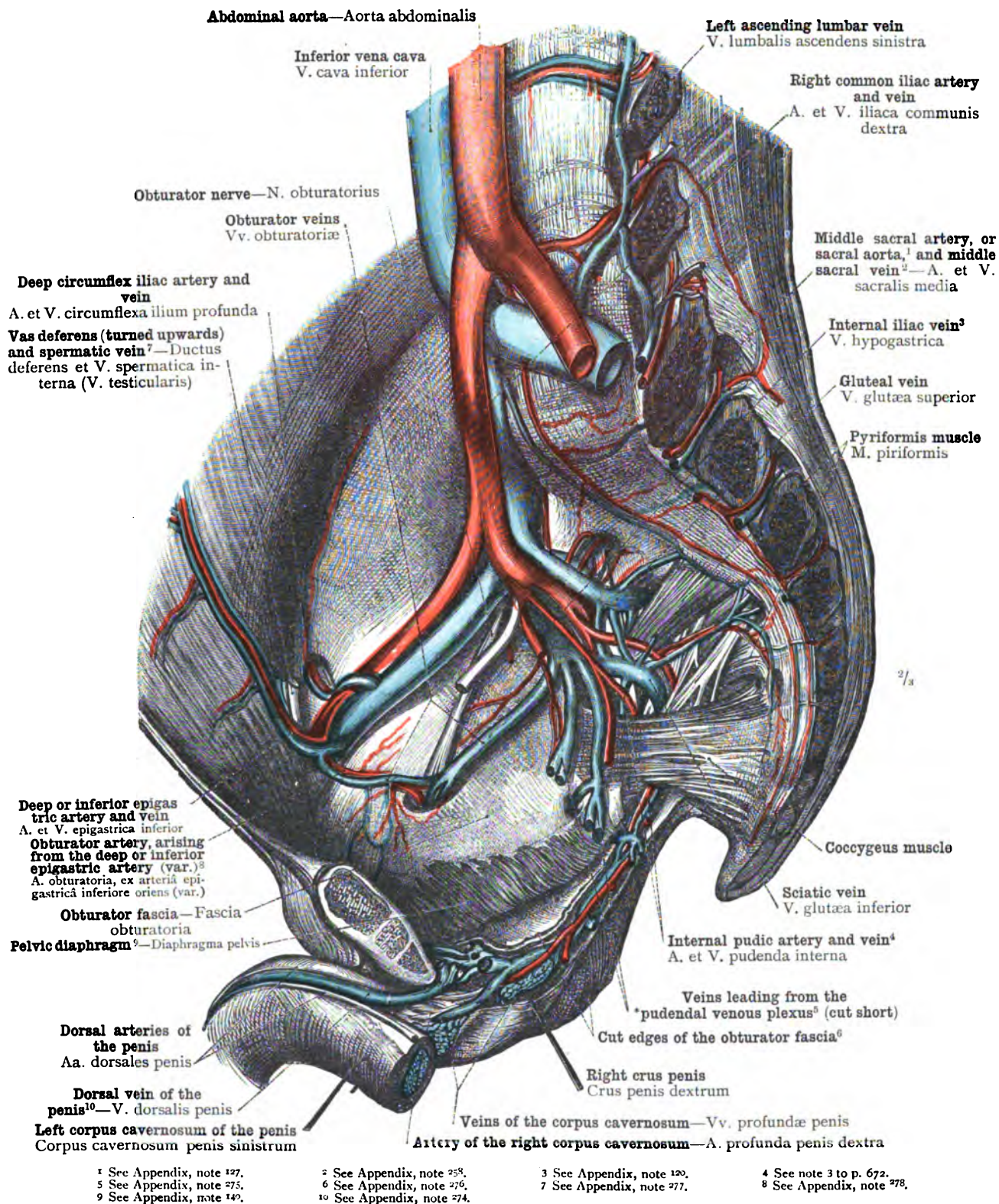
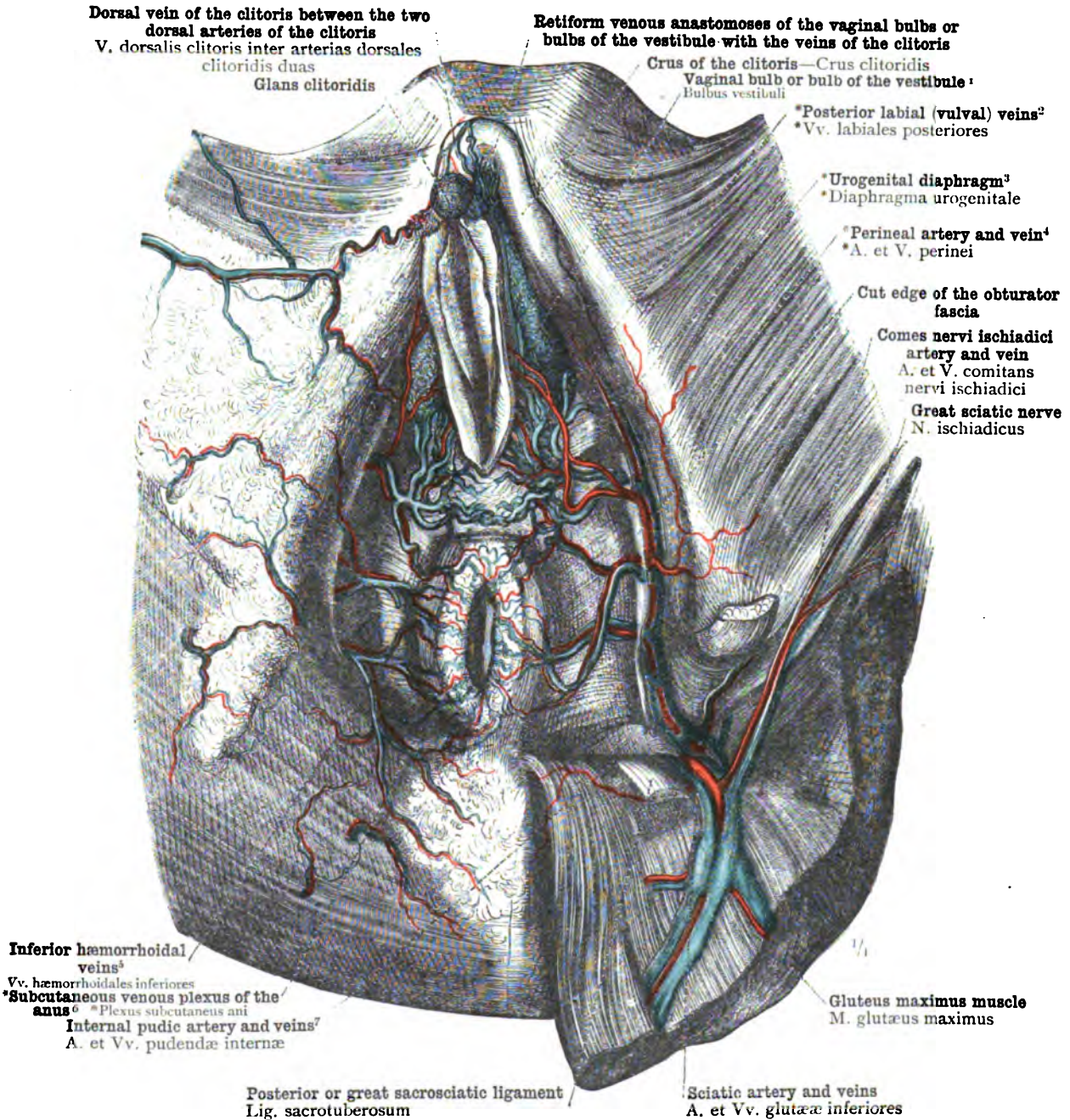


FIG 1070.—THE VEINS OF THE RIGHT LATERAL WALL OF THE PELVIS AND OF THE MALE EXTERNAL GENITAL ORGANS. SEEN FROM THE LEFT SIDE.







<sup>1</sup> See Appendix to Part IV., note 91.  
<sup>5</sup> See note 5 to p. 674.

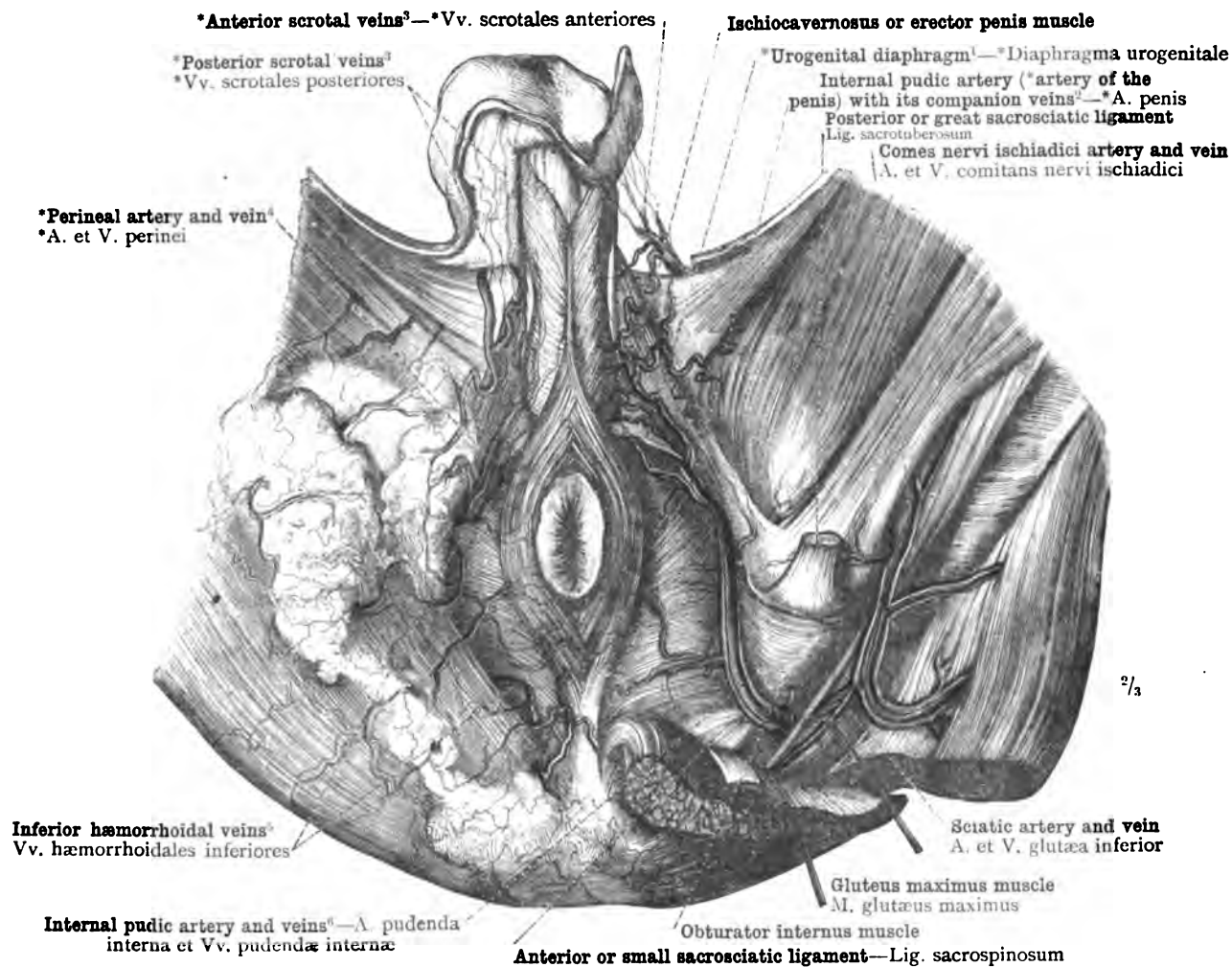
<sup>2</sup> See Appendix, note 138.  
<sup>6</sup> See Appendix, note 279.

<sup>3</sup> See Appendix, note 142.  
<sup>7</sup> See note 5 to p. 672.

<sup>4</sup> See note 4 to p. 676.

FIG. 1072.—THE SUPERFICIAL AND DEEP VEINS OF THE FEMALE PERINEAL REGION. THE INFERIOR HÆMORRHOIDAL VEINS (see note <sup>5</sup> to p. 674), VENÆ HÆMORRHOIDALES INFERIORES; THE \*SUBCUTANEOUS VENOUS PLEXUS OF THE ANUS (see Appendix, note <sup>279</sup>), \*PLEXUS SUBCUTANEUS ANI; THE INTERNAL PUDIC VEINS (see note <sup>3</sup> to p. 672), VENÆ PUDENDÆ INTERNÆ; THE \*POSTERIOR LABIAL (OR VULVAL) VEINS (see Appendix, note <sup>138</sup>), VENÆ LABIALES POSTERIORES; THE DORSAL VEINS OF THE CLITORIS, VENÆ DORSALES CLITORIDIS, AND THE VAGINAL BULB OR BULB OF THE VESTIBULE (see note <sup>1</sup> above), BULBUS VESTIBULI.

On the right side of the body, the superficial vessels were dissected out. On the left side of the body, the gluteus maximus muscle and the posterior or great sacrosclatic ligament were cut across and the segments were widely separated; by cutting through the obturator fascia where it covers the internal pudic vessels in the outer wall of the ischio-rectal fossa, these vessels were exposed in their passage through Alcock's canal (see Appendix, notes <sup>145</sup> and <sup>151</sup>). The sphincter vaginae or bulbocavernosus muscle was removed, together with the anterior extremity of the levator ani muscle, in order to lay bare the vaginal bulbs or bulbs of the vestibule (see note <sup>1</sup> above) and the transverse anastomoses of the veins that drain the blood away from these structures.



<sup>1</sup> See Appendix, note 142.

<sup>2</sup> See Appendix, note 141.

<sup>3</sup> See Appendix, note 138.

<sup>4</sup> Regarding the artery called by the author \*arteria perinei, see Appendix, notes 147 and 149. The same considerations apply to the nomenclature of the companion vein.—Tr.

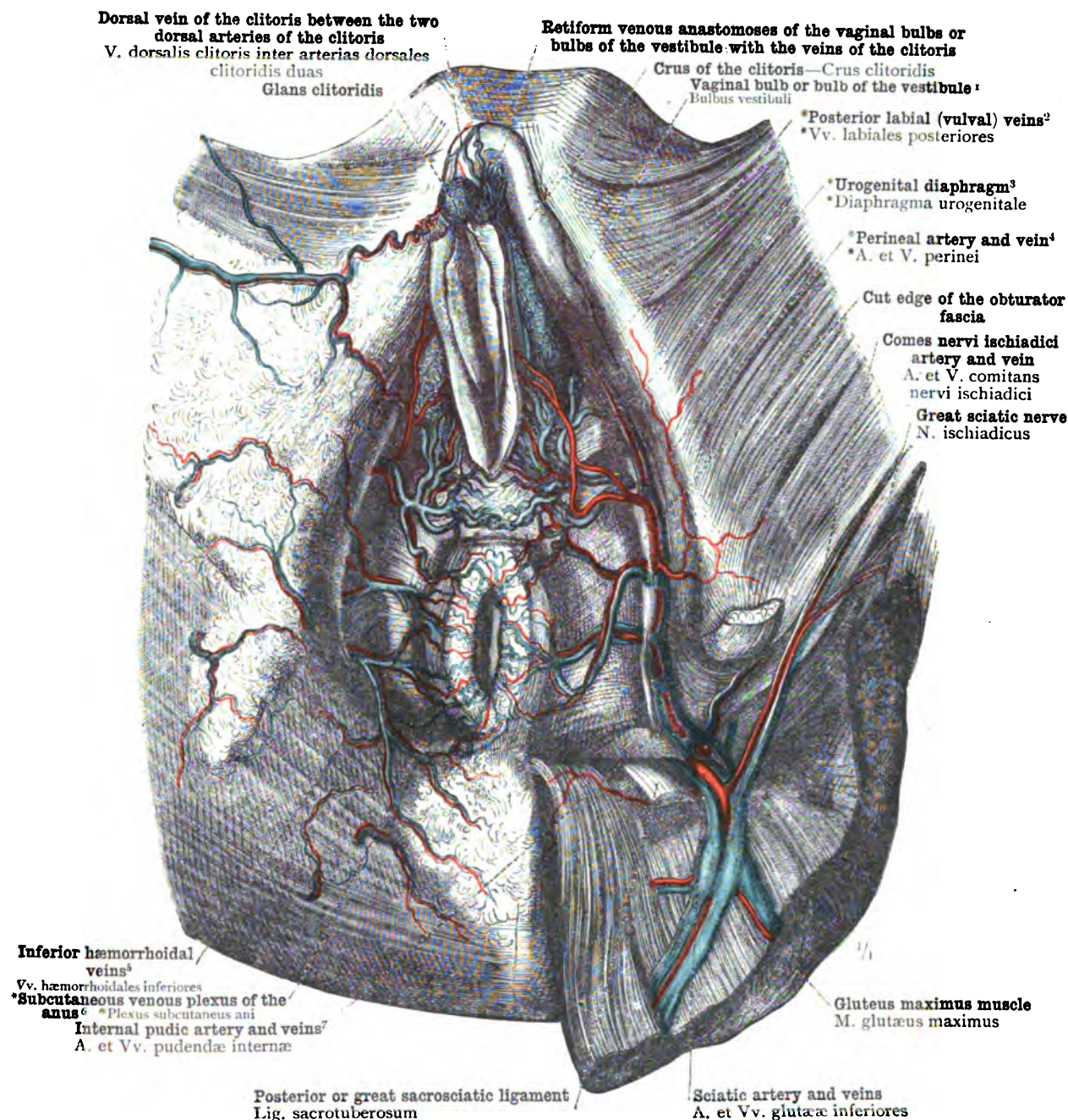
<sup>5</sup> The same considerations apply regarding the nomenclature of these veins as regarding that of the artery they accompany. See Appendix, note 139.

<sup>6</sup> See Appendix, note 139.

FIG. 1071.—THE SUPERFICIAL AND DEEP VEINS OF THE MALE PERINEAL REGION.

On the right side of the body the superficial bloodvessels were dissected out and the subcutaneous fat was partially preserved. On the left side of the body the gluteus maximus muscle and the posterior or great sacrosciatic ligament (ligamentum sacrotuberosum) were cut across and the segments were drawn apart, in order to display the passage of the internal pudic artery and veins through the small sacrosciatic foramen (foramen ischiadicum minus); these vessels were also exposed in the outer wall of the ischioanal fossa. The left testis was removed, in order to lay bare the \*anterior scrotal veins and their anastomoses with the \*posterior scrotal veins.





<sup>1</sup> See Appendix to Part IV., note 91.  
<sup>5</sup> See note 5 to p. 674.

<sup>2</sup> See Appendix, note 139.  
<sup>6</sup> See Appendix, note 279.

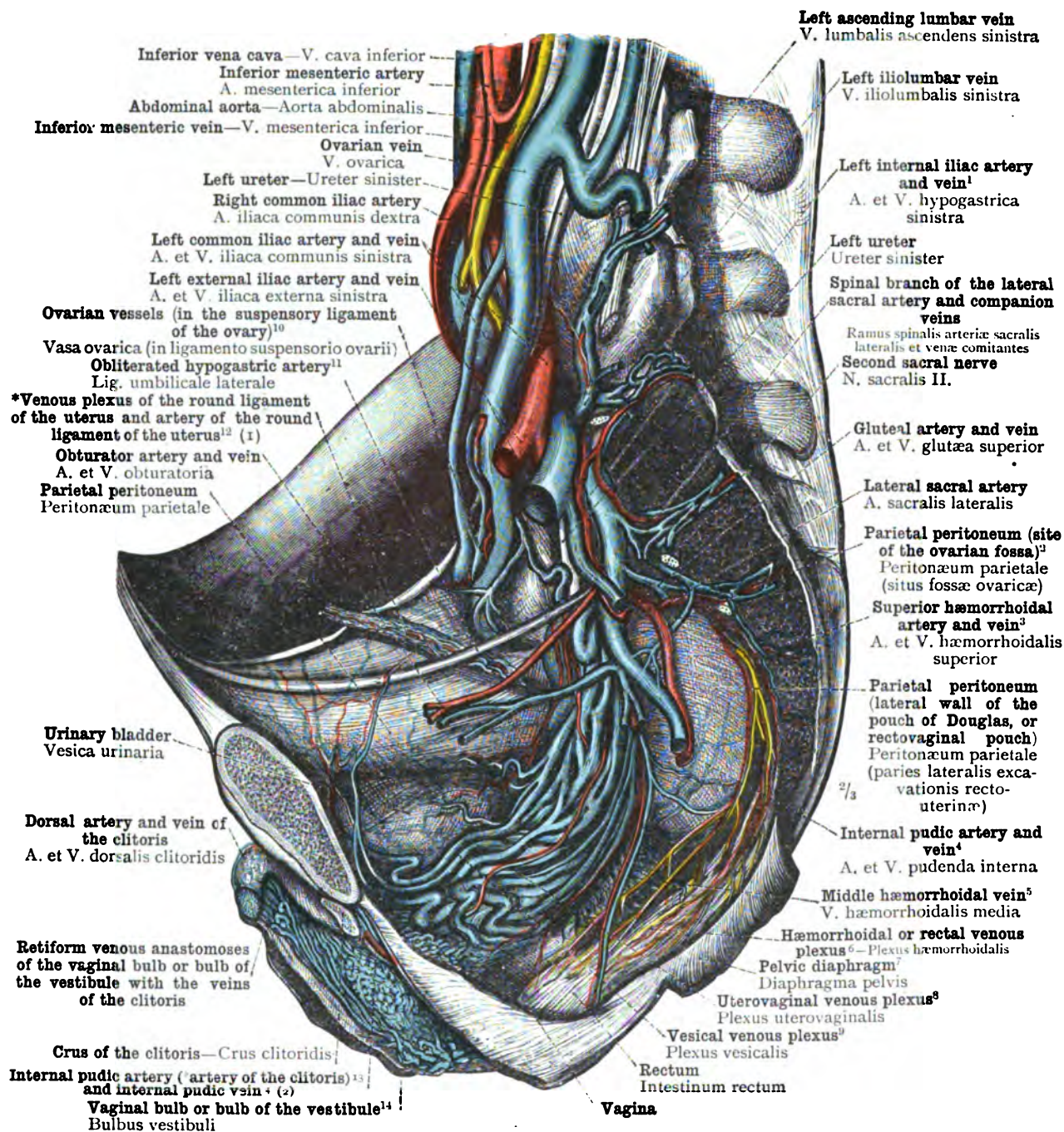
<sup>3</sup> See Appendix, note 142.  
<sup>7</sup> See note 3 to p. 672.

<sup>4</sup> See note 4 to p. 676.

**FIG. 1072.—THE SUPERFICIAL AND DEEP VEINS OF THE FEMALE PERINEAL REGION.** THE INFERIOR HÆMORRHOIDAL VEINS (see note 5 to p. 674), *VENÆ HÆMORRHOIDALES INFERIORES*; THE \*SUBCUTANEOUS VENOUS PLEXUS OF THE ANUS (see Appendix, note 279), \**PLEXUS SUBCUTANEUS ANI*; THE INTERNAL PUDIC VEINS (see note 3 to p. 672), *VENÆ PUDENDÆ INTERNÆ*; THE \*POSTERIOR LABIAL (OR VULVAL) VEINS (see Appendix, note 139), *VENÆ LABIALES POSTERIORES*; THE DORSAL VEINS OF THE CLITORIS, *VENÆ DORSALES CLITORIDIS*, AND THE VAGINAL BULB OR BULB OF THE VESTIBULE (see note 1 above), *BULBUS VESTIBULI*.

On the right side of the body, the superficial vessels were dissected out. On the left side of the body, the gluteus maximus muscle and the posterior or great sacrosacral ligament were cut across and the segments were widely separated; by cutting through the obturator fascia where it covers the internal pudic vessels in the outer wall of the ischio-rectal fossa, these vessels were exposed in their passage through Alcock's canal (see Appendix, notes 145 and 151). The sphincter vaginae or bulbocavernosus muscle was removed, together with the anterior extremity of the levator ani muscle, in order to lay bare the vaginal bulbs or bulbs of the vestibule (see note 1 above) and the transverse anastomoses of the veins that drain the blood away from these structures.





(1) \*Plexus venosus ligamenti teretis uteri et arteria ligamenti teretis uteri

(2) \*A. clitoridis et V. pudenda interna

<sup>1</sup> See Appendix, note 120.

<sup>2</sup> A description of the *ovarian fossa* or *fovea* (*fossa ovarii*, Quain) is given in the Appendix to Part IV., note 79.—Tr.

<sup>3</sup> Called by Macalister the *superior rectal artery and vein*.

<sup>4</sup> See note 3 to p. 672.

<sup>5</sup> Called by Macalister the *middle rectal vein*.

<sup>6</sup> See Appendix, note 250.

<sup>7</sup> See Appendix, note 147.

<sup>8</sup> See Appendix, note 251.

<sup>9</sup> This ligament is known also as the *infundibulopelvic* or *ovario-pelvic fold* or *ligament*.

<sup>10</sup> Or *external umbilical ligament*. See Appendix, note 148.

<sup>11</sup> The homologues in the female of the *cremasteric vein* and *artery*, respectively, in the male.—Tr.

<sup>12</sup> See Appendix, note 150.

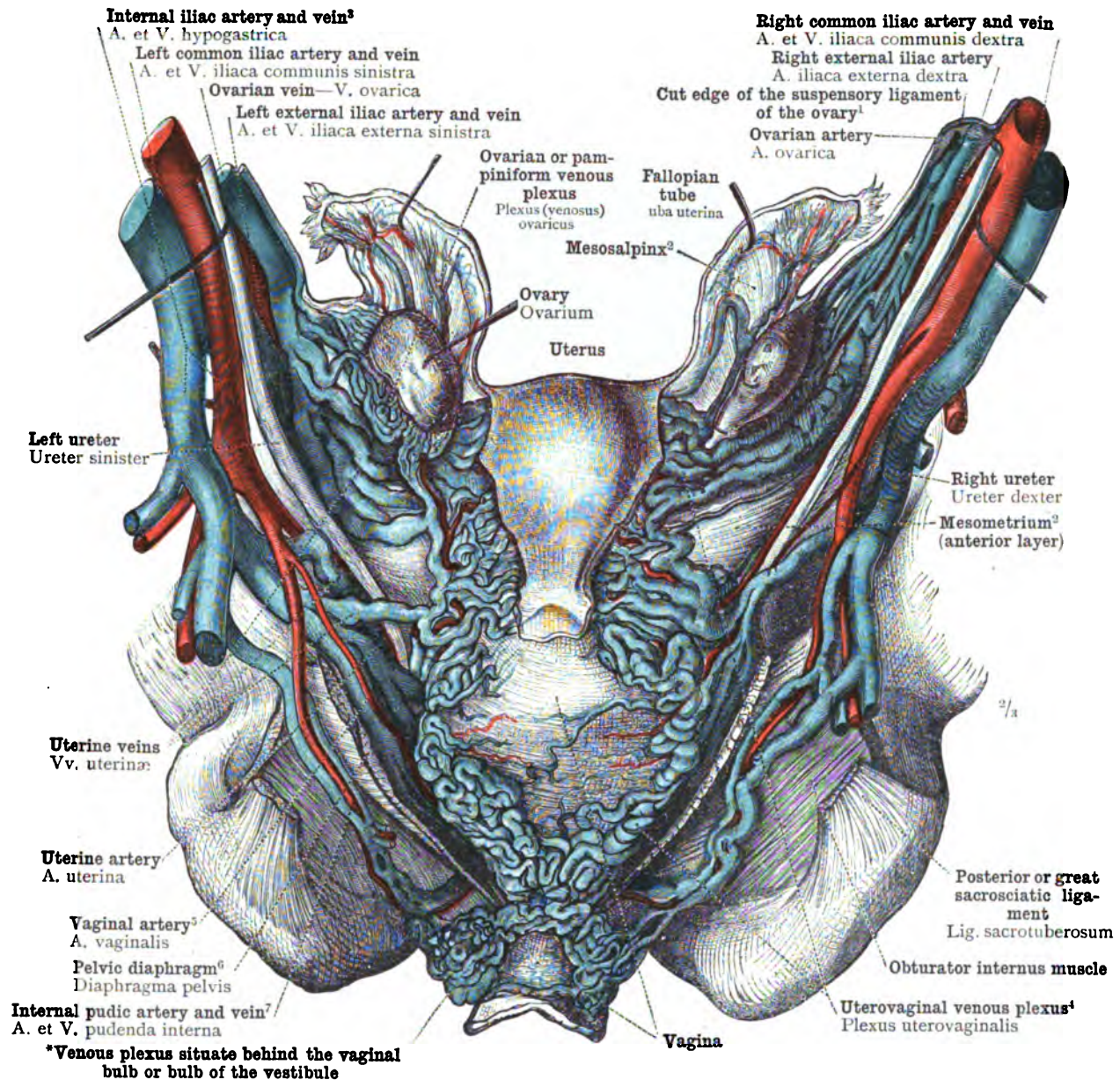
<sup>13</sup> See Appendix, note 150.

<sup>14</sup> See Appendix to Part IV., note 91.

FIG. 1073.—THE OVARIAN VEIN, VENA OVARICA; THE VESICAL VENOUS PLEXUS (see Appendix, note 275), PLEXUS VESICALIS, AND THE UTEROVAGINAL PLEXUS (see Appendix, note 280), PLEXUS UTEROVAGINALIS; THE \*VENOUS PLEXUS OF THE ROUND LIGAMENT OF THE UTERUS (see note 12 above), \*PLEXUS VENOSUS LIGAMENTI TEREtis UTERI. THE SUPERIOR AND MIDDLE HÆMORRHOIDAL (OR RECTAL) VEINS, VENÆ HÆMORRHOIDALES SUPERIOR ET MEDIA; HÆMORRHOIDAL VENOUS PLEXUS, PLEXUS HÆMORRHOIDALIS. THE VENOUS PLEXUSES THAT SURROUND THE SPINAL BRANCHES OF THE ILIOLUMBAR AND LATERAL SACRAL ARTERIES.

By a section, which in front passed near the median plane, and behind through the left row of sacral foramina, the left lateral wall of the pelvis was removed; but the parietal peritoneal investment of this wall was preserved up to its reflection on to the urinary bladder, the vagina, and the rectum. The parts of these organs situate outside the peritoneum were laid bare in so far as this was possible without removing the adjacent venous plexuses. The pelvic diaphragm was turned downwards.





<sup>1</sup> Known also as the *infundibulopelvic* or *ovariopelvic fold* or *ligament*.

<sup>3</sup> See Appendix, note 120.

<sup>7</sup> See note 3 to p. 672

<sup>4</sup> See Appendix, note 282.

<sup>5</sup> See Appendix, note 163.

<sup>2</sup> See Appendix to Part IV., note 82.

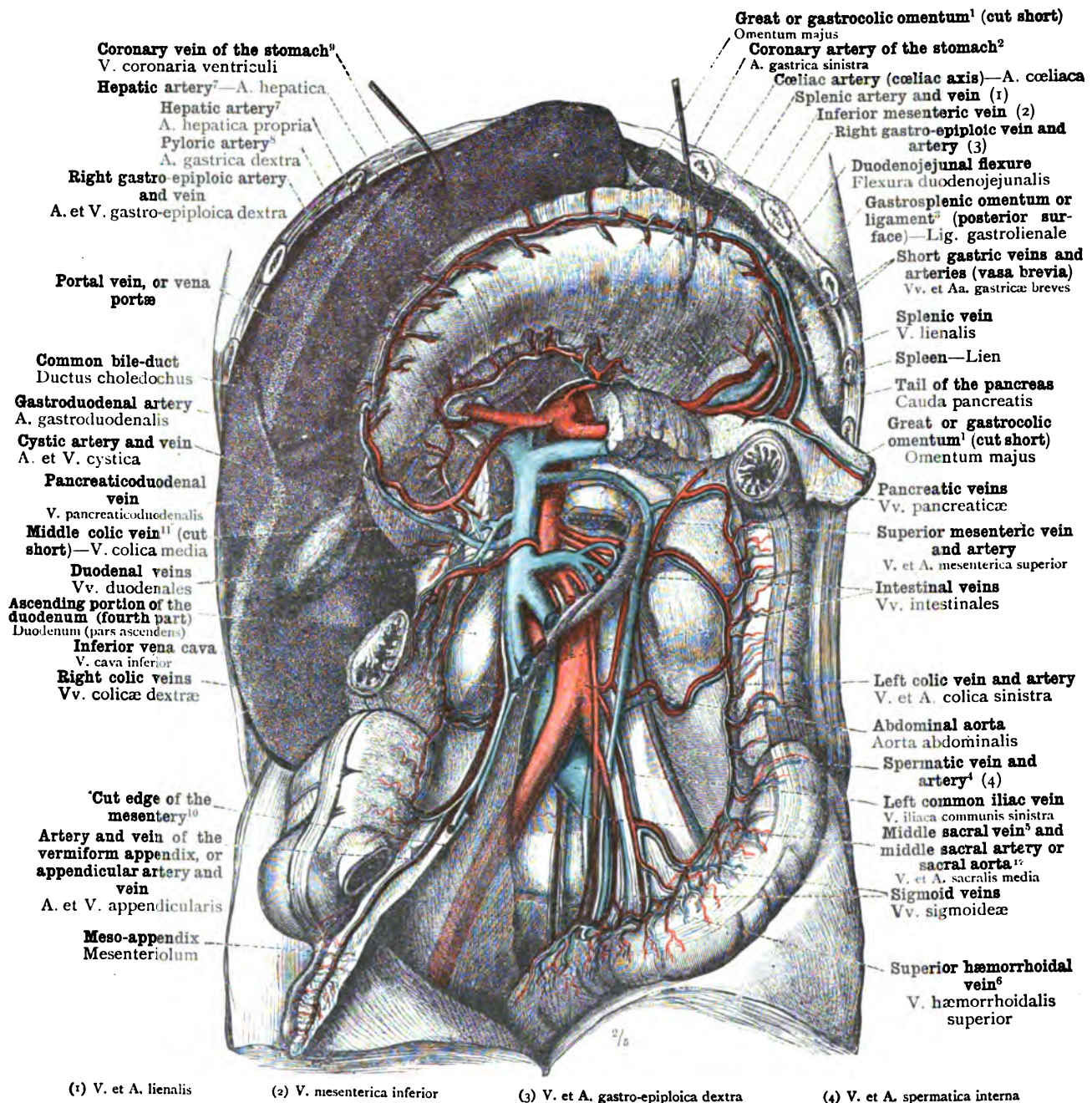
<sup>6</sup> See Appendix, note 140.

FIG. 1074.—THE VEINS OF THE UTERUS, THE VAGINA, THE OVARIES, AND THE FALLOPIAN TUBES, SEEN FROM BEHIND: THE OVARIAN VEIN, VENA OVARICA, CONTINUED INTO THE OVARIAN OR PAMPINIFORM VENOUS PLEXUS, PLEXUS VENOSUS OVARICUS. AND HAVING FREE CONNEXIONS WITH THE UTERINE VEINS, VENÆ UTERINÆ, AND THE UTEROVAGINAL VENOUS PLEXUS (see Appendix, note 281), PLEXUS UTEROVAGINALIS. THE INTERNAL PUDIC VEIN, AND ITS CONNEXIONS WITH THE VENOUS PLEXUS SITUATE BEHIND THE VAGINAL BULB OR BULB OF THE VESTIBULE.

The posterior half of the pelvis, together with the rectum and the posterior layer of the mesometrium, having been removed by a coronal section passing just behind the spine of the ischium, the uterovaginal plexus, with the veins leading from it, was laid bare. The ovaries were drawn well upwards, in order to spread out their mesentery; the left ovary was also drawn somewhat inwards, so as to display, after the outer layer of the mesovarium had been removed, the ovarian or pampiniform venous plexus, plexus (venosus) ovaricus. The common iliac vessels and the ureters were drawn outwards on each side. The internal pudic vessels were fully exposed by the removal of the obturator fascia where it covers them as they pass along the outer wall of the ischio-rectal fossa.

### The Veins of the Female Pelvis.





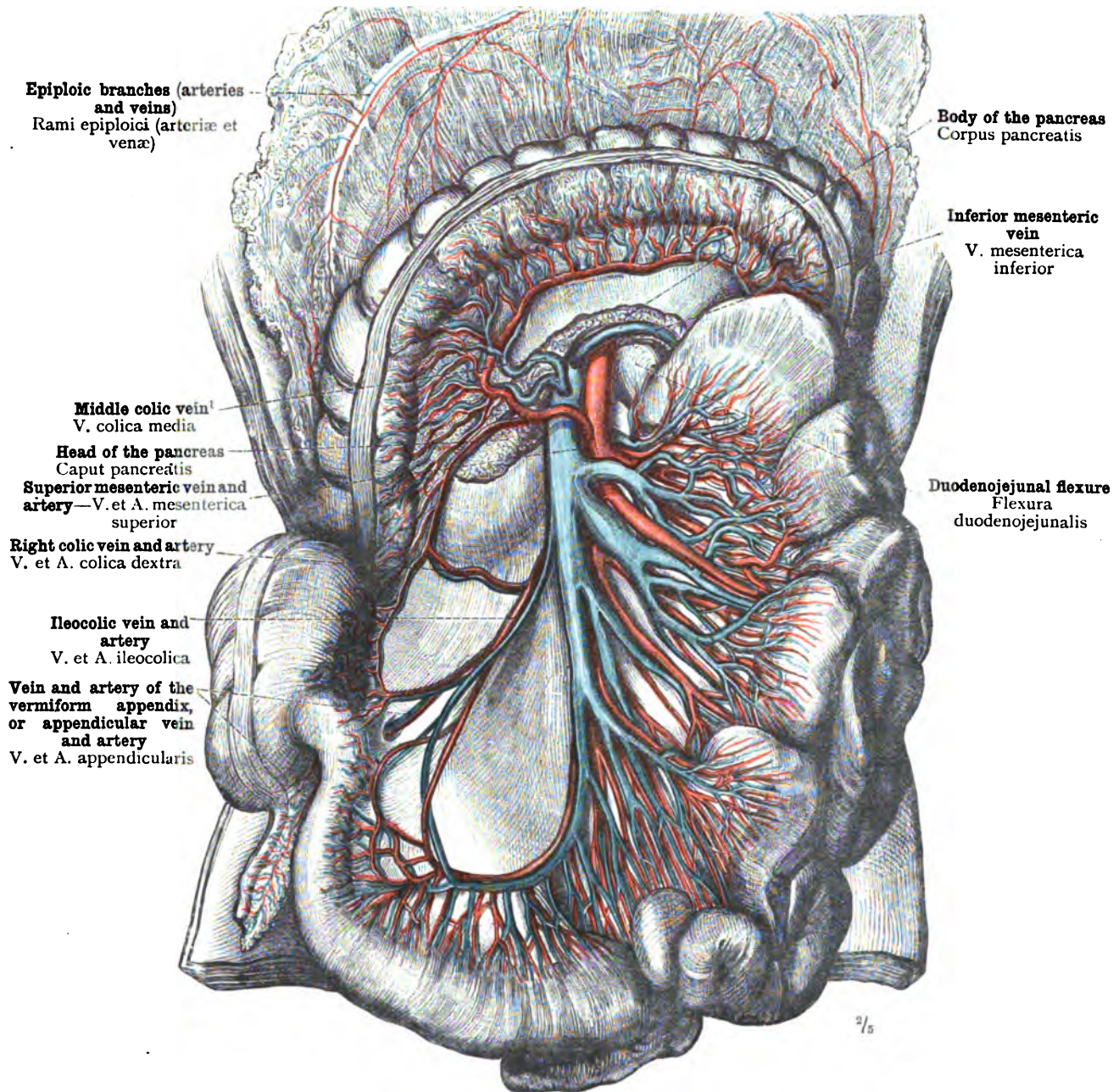
- <sup>1</sup> Or *epiploon*. <sup>2</sup> Called by Macalister the *gastric artery*.  
<sup>3</sup> The *gastrosplenic omentum* is connected below with the *great omentum*, and is often regarded as a part of it.—Tr.  
<sup>4</sup> See Appendix, note 277. <sup>5</sup> See Appendix, note 258. <sup>6</sup> Called by Macalister the *superior rectal vein*.  
<sup>7</sup> See Appendix, note 13. <sup>8</sup> Called by Macalister the *superior pyloric artery*. See Appendix, note 131.  
<sup>9</sup> Called by Macalister the *gastric vein*.  
<sup>10</sup> I.e., the *mesentery of the jejunum and ileum*, which is always denoted in England by the term *mesentery* when used without qualification.—Tr.  
<sup>11</sup> Called by Macalister the *transverse colic vein*. <sup>12</sup> See Appendix, note 127.

FIG. 1075.—FORMATION OF THE PORTAL VEIN OR VENA PORTÆ BY THE CONFLUENCE OF THE SUPERIOR AND INFERIOR MESENTERIC VEINS, VENÆ MESENTERICÆ SUPERIOR ET INFERIOR, THE SPLENIC VEIN, VENA LIENALIS, AND THE CORONARY VEIN OF THE STOMACH OR GASTRIC VEIN, VENA CORONARIA VENTRICULI.

The great or gastrocolic omentum (or epiploon) was cut away immediately below the great curvature of the stomach, and the stomach itself was turned upwards. The jejunum and the ileum, as well as the transverse colon and the upper half of the ascending colon, were cut away, and the mesentery (see note <sup>10</sup> above) was cut away close to its root. The cæcum was drawn outwards, in order to stretch the meso-appendix and to display the artery and vein of the vermiform appendix (appendicular artery and vein—arteria et vena appendicularis) between its layers. By the partial removal of the pancreas, the confluence of the superior mesenteric vein, vena mesenterica superior, and the splenic vein, vena lienalis, was displayed. The abdominal aorta, the inferior vena cava, the middle sacral artery or sacral aorta, and the middle sacral vein, were exposed by the removal of the parietal peritoneum covering these vessels.

### The Portal System of Veins.





<sup>1</sup> Called by Macalister the *transverse colic vein*.

FIG. 1076.—THE TRIBUTARIES OF THE SUPERIOR MESENTERIC VEIN, VENA MESENTERICA SUPERIOR, AND THE TERMINAL PORTION OF THE INFERIOR MESENTERIC VEIN, VENA MESENTERICA INFERIOR. SEEN FROM BEFORE.

The jejunum (intestinum jejunum) and the ileum (intestinum ileum), with the mesentery (*see note* <sup>10</sup> to p. 678), were drawn to the left; the colon and the transverse mesocolon (mesocolon transversum), with the adjoining portion of the great or gastrocolic omentum (or epiploon), were drawn upwards.

**V. mesenterica superior**—The superior mesenteric vein.

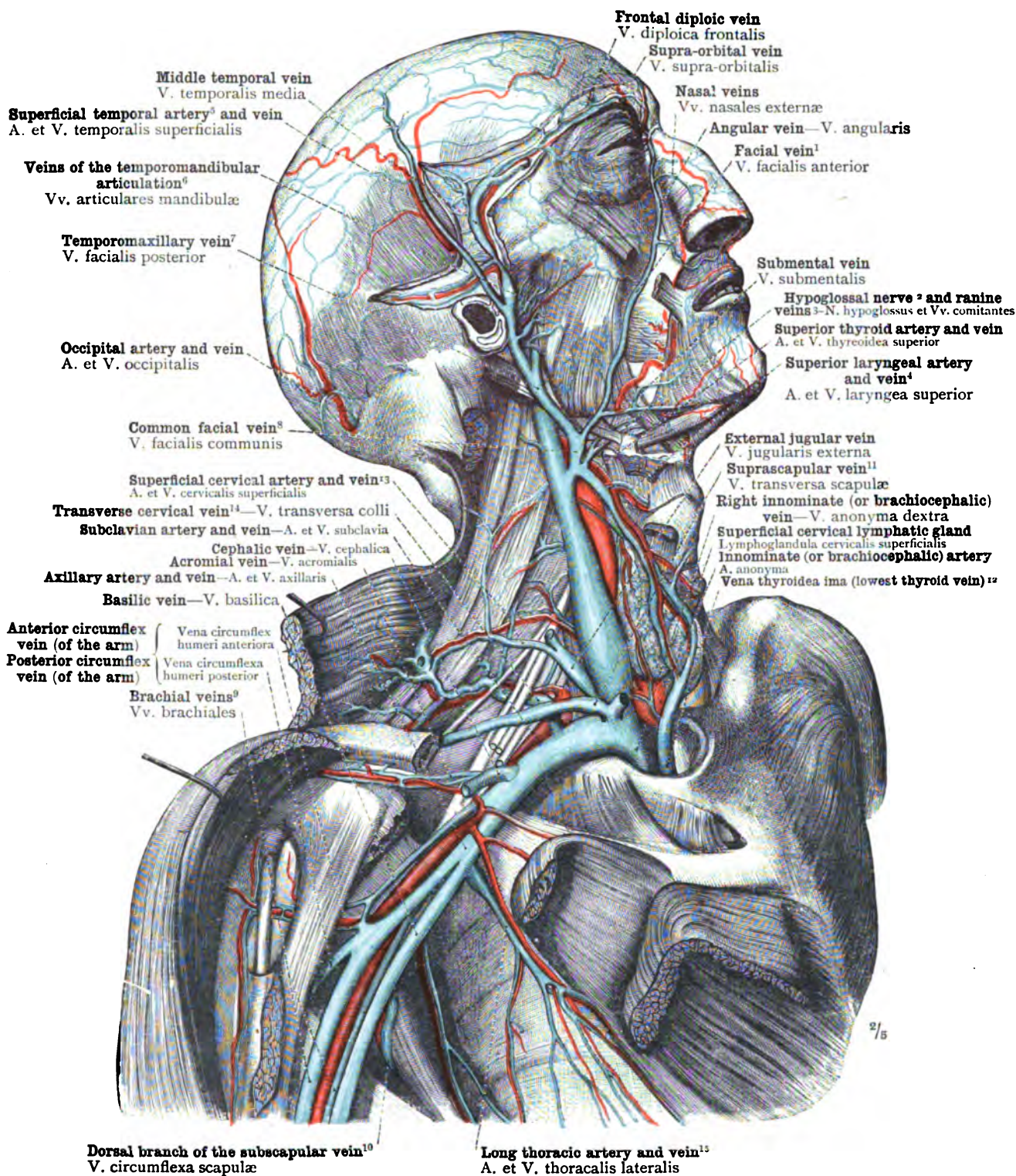




VENÆ COLLI ET CAPITIS  
THE VEINS OF THE HEAD AND  
NECK







<sup>1</sup> Sometimes distinguished as the *anterior facial vein*. See Appendix, note <sup>283</sup>.

<sup>2</sup> Two of the cranial nerves in Soemmerring's enumeration, *ninth* in that of Willis; sometimes also known as the *lingual motor nerve*.

<sup>3</sup> See Appendix, note <sup>286</sup>. <sup>4</sup> Or *laryngeal branches* of the *superior thyroid artery and vein*, respectively.

<sup>5</sup> See Appendix, note <sup>168</sup>. <sup>6</sup> See Appendix, note <sup>287</sup>. <sup>7</sup> Sometimes called the *posterior facial vein*. See Appendix, note <sup>281</sup>.

<sup>8</sup> See Appendix, note <sup>283</sup>. <sup>9</sup> Or *vena comites of the brachial artery*. <sup>10</sup> Often called the *dorsalis scapulae vein*.

<sup>11</sup> Known also as the *transverse scapular or transverse humeral vein*. <sup>12</sup> Companion to the *thyroidea ima artery*. See note <sup>1</sup> to p. 590.

<sup>13</sup> See Appendix, note <sup>285</sup>. <sup>14</sup> See Appendix, note <sup>262</sup>. <sup>15</sup> Known also as the *external mammary artery and vein*.

FIG. 1078.—THE FACIAL VEIN (see note <sup>1</sup> above), VENA FACIALIS ANTERIOR; THE FORMATION OF THE TEMPOROMAXILLARY VEIN (see note <sup>7</sup> above), VENA FACIALIS POSTERIOR; THE INTERNAL JUGULAR VEIN, VENA JUGULARIS INTERNA; THE AXILLARY VEIN, VENA AXILLARIS. SEEN FROM THE RIGHT SIDE AND BEFORE.

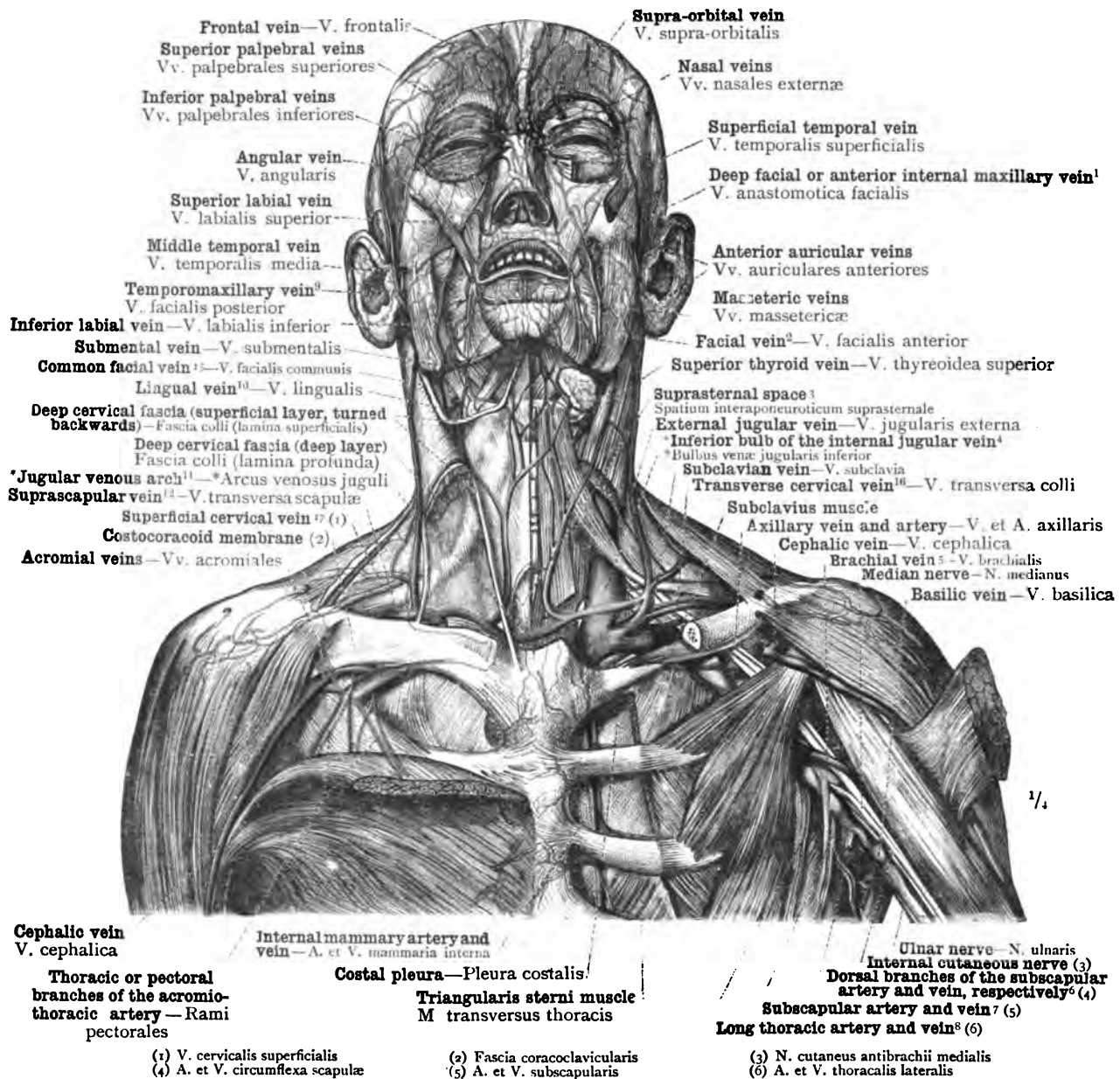


FIG. 1079.—THE SUPERFICIAL VEINS OF THE FACE, THE SUPERFICIAL AND DEEP VEINS OF THE NECK, AND THE VEINS OF THE AXILLA; SEEN FROM BEFORE.

On the right side of the neck, by the removal of the superficial layer of the deep cervical fascia, the \*submaxillary fossa (\*fossa submaxillaris—see note <sup>13</sup> below), the \*greater supraclavicular fossa (fossa supraclavicularis major—see note <sup>14</sup> below), and the suprasternal space (spatium interaponeuroticum suprasternale—see note <sup>3</sup> below), were opened. The lower half of the right sternocleidomastoid muscle was removed, together with the corresponding portion of the superficial layer of the deep cervical fascia, in order to lay bare the opening of the \*jugular venous arch (see Appendix, note <sup>123</sup>) into the terminal portion of the external jugular vein. On the left side of the neck the ensheathing portion of the deep cervical fascia was entirely removed, and the lower half of the sternocleidomastoid muscle was removed, together with the sternal extremity of the clavicle, in order to display the deep venous trunks and the left \*venous angle (\*angulus venosus—see Appendix, note <sup>125</sup>). On the right side of the body, the clavicular portion of the pectoralis major muscle has been turned downwards, thus exposing the axillary vein above the pectoralis minor muscle. On the left side of the body, the pectoralis major muscle having been removed, the vessels and nerves of the axilla were dissected out. Further, on this side, by the partial removal of the anterior or external intercostal aponeuroses and of the internal intercostal muscles, the internal mammary vessels were exposed, and their relation to the costal pleura and to the triangularis sterni muscle was displayed.

<sup>1</sup> See note <sup>2</sup> to p. 682.

<sup>2</sup> Sometimes distinguished as the *anterior facial vein*. See Appendix, note <sup>263</sup>.

<sup>3</sup> Called by Macalister *Burns's space*.

<sup>4</sup> See Appendix, note <sup>121</sup>.

<sup>5</sup> Or *vena comes of the brachial artery*.

<sup>6</sup> Known also as the *dorsalis scapulae artery and vein*, respectively.

<sup>7</sup> See Appendix, note <sup>201</sup>.

<sup>8</sup> Known also as the *external mammary artery and vein*.

<sup>9</sup> Sometimes called the *posterior facial vein*. See Appendix, note <sup>263</sup>.

<sup>10</sup> Or *vena comes of the lingual artery*. See Appendix, note <sup>266</sup>.

<sup>11</sup> See Appendix, note <sup>123</sup>.

<sup>12</sup> Known also as the *transverse scapular or transverse humeral vein*.

<sup>13</sup> See Appendix, note <sup>268</sup>.

<sup>14</sup> See Appendix, note <sup>269</sup>.

<sup>15</sup> See Appendix, note <sup>263</sup>.

<sup>16</sup> See Appendix, note <sup>262</sup>.

<sup>17</sup> See Appendix, note <sup>265</sup>.

## Veins of the Head, the Neck, and the Axilla.



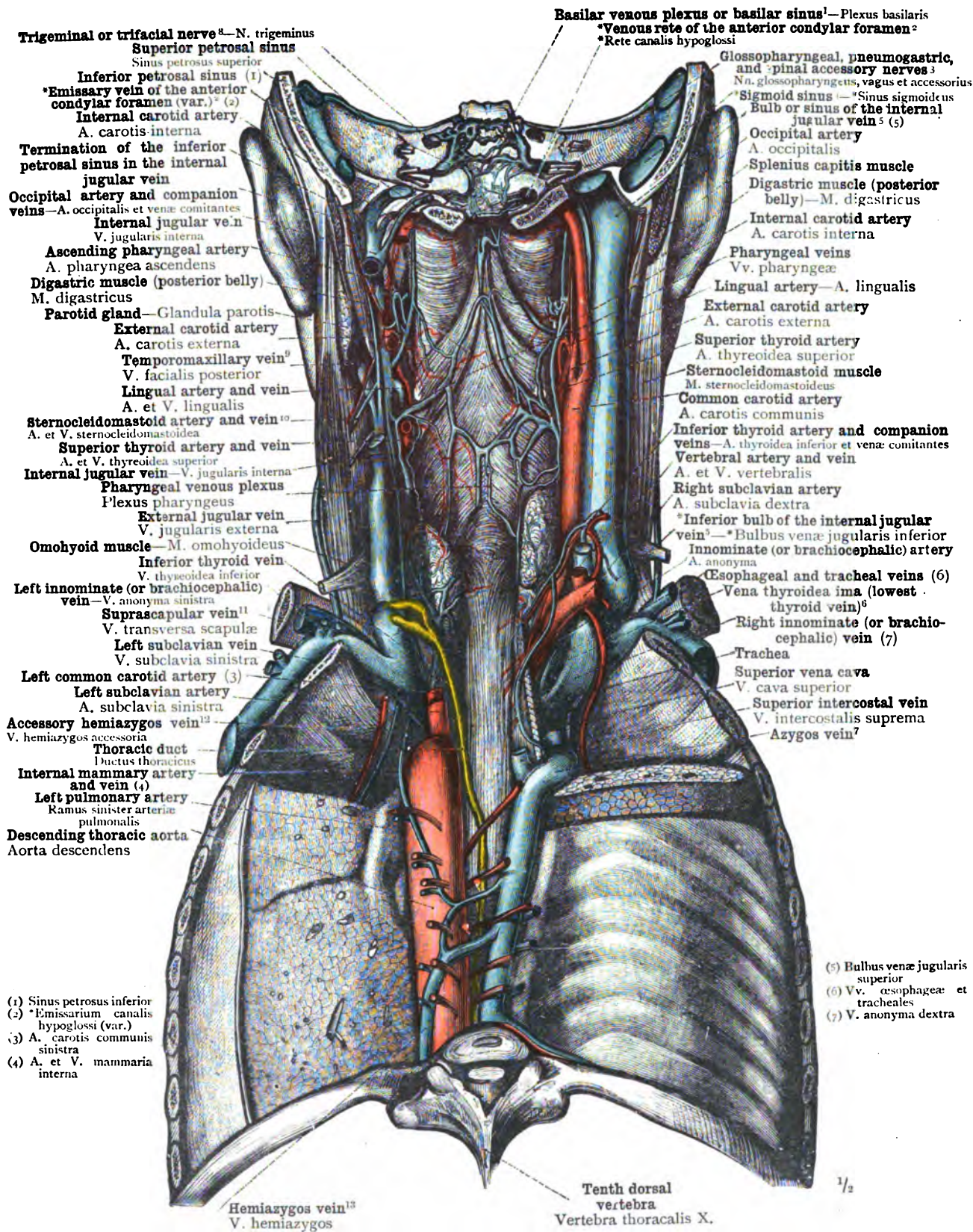


FIG. 1080.—THE VEINS OF THE PHARYNX, THE OESOPHAGUS, AND THE TRACHEA; THE BASILAR VENOUS PLEXUS OR BASILAR SINUS (see Appendix, note <sup>200</sup>), PLEXUS BASILARIS; THE AZYGOS, HEMIAZYGOS, AND ACCESSORY HEMIAZYGOS VEINS (see notes <sup>1</sup>, <sup>12</sup>, and <sup>13</sup> above); THE THORACIC DUCT, DUCTUS THORACICUS. SEEN FROM BEHIND.

The Pharyngeal and Basilar Venous Plexuses.—The Azygos Veins.

<sup>1</sup> See Appendix, note <sup>290</sup>.

<sup>2</sup> See Appendix, note <sup>291</sup>.

<sup>3</sup> Or ninth, tenth, and eleventh cranial nerves in Soemmering's enumeration; together forming the eighth cranial nerve in Willis's enumeration.

<sup>4</sup> The \*sigmoid sinus is the proximal portion of the lateral sinus as described by most English anatomists. See Appendix, note <sup>264</sup>.

<sup>5</sup> See Appendix, note <sup>11</sup>.

<sup>6</sup> Companion to the thyroidea ima artery. See note <sup>1</sup> to p. 590.

<sup>7</sup> Known also as the right or large azygos vein.

<sup>8</sup> Or fifth cranial nerve.

<sup>9</sup> Sometimes called the posterior facial vein. See Appendix, note <sup>283</sup>.

<sup>10</sup> See Appendix, note <sup>160</sup>.

<sup>11</sup> Known also as the transverse scapular or transverse humeral vein.

<sup>12</sup> Known also as the left upper azygos vein.

<sup>13</sup> Known also as the left lower or small azygos vein.



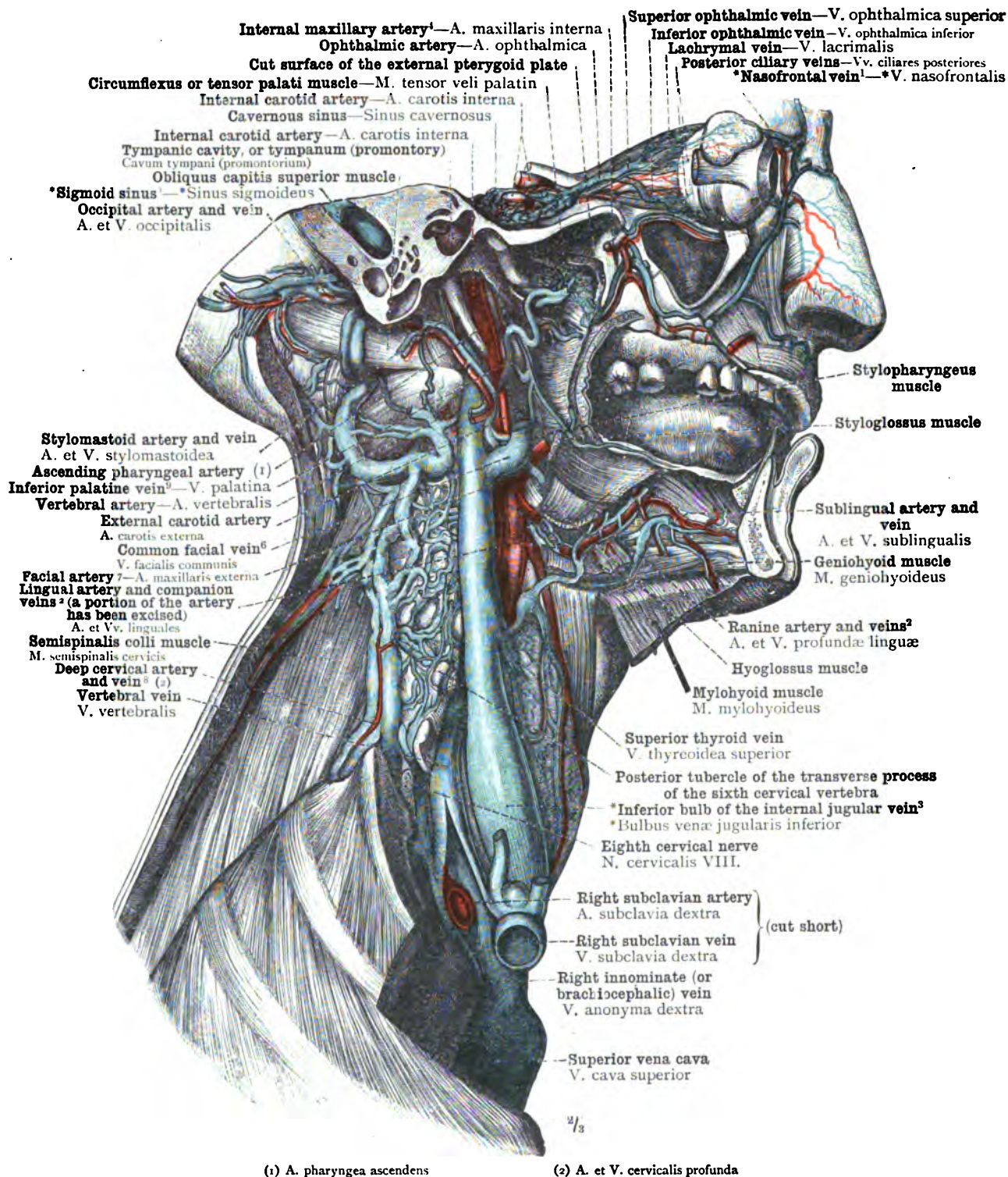
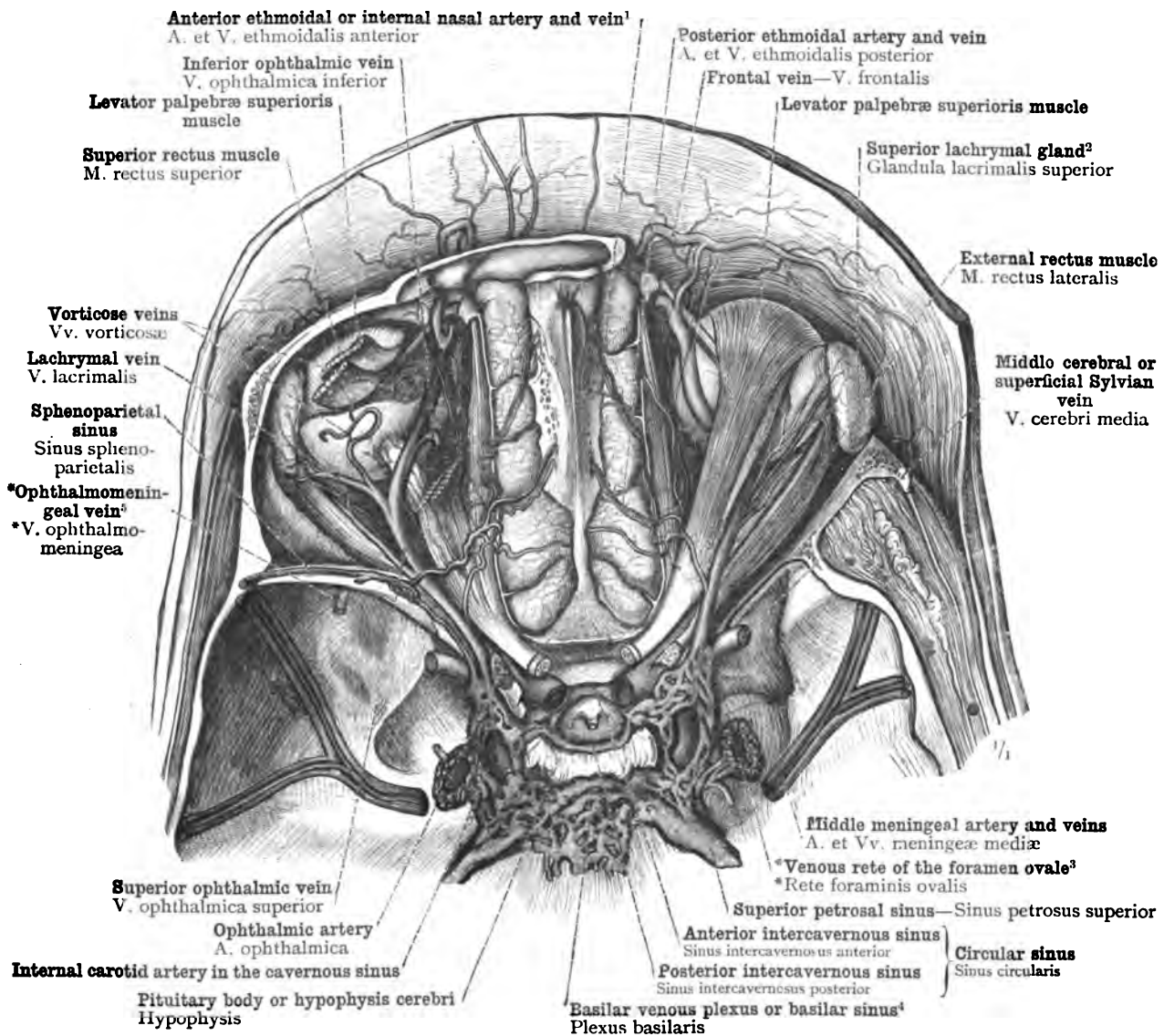
<sup>1</sup> See Appendix, note 282.<sup>2</sup> See Appendix, note 286.<sup>3</sup> See Appendix, note 121.<sup>4</sup> See Appendix, note 166.<sup>5</sup> The \*sigmoid sinus is the proximal portion of the lateral sinus as described by most English anatomists. See Appendix, note 264.<sup>6</sup> See Appendix, note 233.<sup>7</sup> See Appendix, note 166.<sup>8</sup> The deep cervical vein is known also as the posterior vertebral vein.<sup>9</sup> See note 7 to p. 689.

FIG. 1081.—THE CAVERNOUS SINUS AND THE VEINS OF THE ORBIT; THE DEEP VISCERAL VEINS OF THE HEAD AND NECK; THE DEEP CERVICAL OR POSTERIOR VERTEBRAL VEIN, VENA CERVICALIS PROFUNDA, AND THE VERTEBRAL VEIN, VENA VERTEBRALIS. SEEN FROM THE RIGHT SIDE.

### The Deep Veins of the Head and Neck.



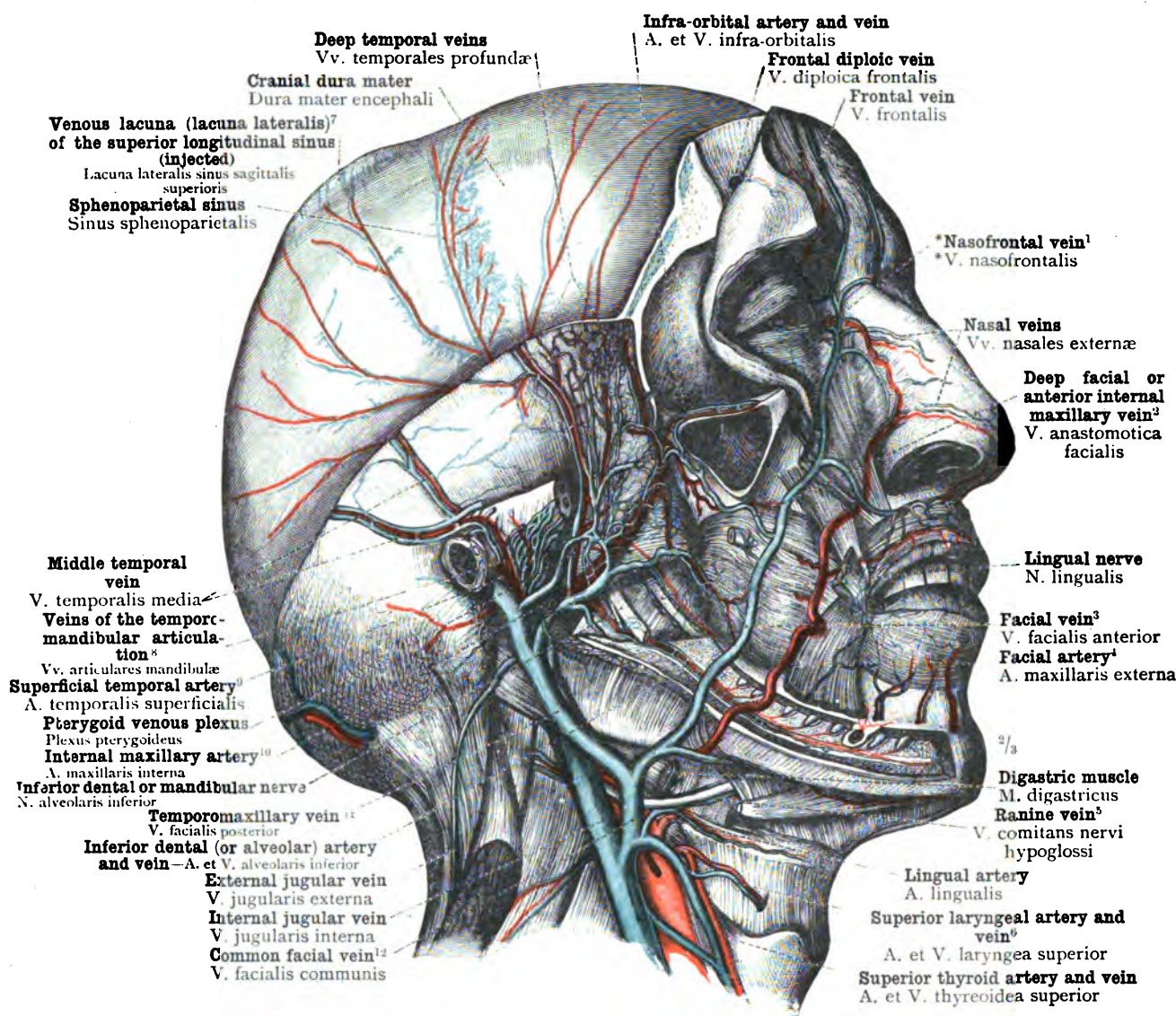


<sup>1</sup> See Appendix, note 184.    <sup>2</sup> See Appendix, note 179.    <sup>3</sup> See Appendix, note 292.  
<sup>4</sup> Sometimes also known as the *transverse sinus*. See Appendix, note 292.  
<sup>5</sup> A communicating branch between the *superior ophthalmic vein* and the *middle cerebral or superficial Sylvian vein*, which in this specimen, however, opens posteriorly into the *sphenoparietal sinus*.

FIG. 1082.—THE VEINS OF THE ORBIT, SEEN FROM ABOVE: THE SUPERIOR OPHTHALMIC VEIN, VENA OPHTHALMICA SUPERIOR, ITS CONFLUENCE WITH THE INFERIOR OPHTHALMIC VEIN, VENA OPHTHALMICA INFERIOR, AND ITS TERMINATION IN THE CAVERNOUS SINUS, SINUS CAVERNOSUS; THE LACHRYMAL VEIN, VENA LACRIMALIS; THE VORTICOSE VEINS, VENÆ VORTICOSÆ; MUSCULAR-VEINS, VENÆ MUSCULARES; THE \*OPHTHALMOMENINGEAL VEIN, \*VENA OPHTHALMOMENINGEA, OPENING POSTERIORLY, IN THIS SPECIMEN, INTO THE SPHENOPARIETAL SINUS, SINUS SPHENOPARIETALIS. THE CAVERNOUS SINUS, SINUS CAVERNOSUS, AND THE ANTERIOR AND POSTERIOR INTERCAVERNOUS SINUSES, SINUS CAVERNOSI ANTERIOR ET POSTERIOR, THE RIGHT AND LEFT CAVERNOUS SINUSES AND THE ANTERIOR AND POSTERIOR INTERCAVERNOUS SINUSES, COMBINING TO MAKE UP THE CIRCULAR SINUS, SINUS CIRCULARIS. THE BASILAR VENOUS PLEXUS OR BASILAR SINUS (see note <sup>4</sup> above), PLEXUS BASILARIS. THE MIDDLE MENINGEAL ARTERY AND VEINS, ARTERIA ET VENÆ MENINGEÆ MEDIÆ.

The left orbit was opened, by the removal of its roof, the right by the removal of its roof and the greater part of its outer wall. On the right side, the muscles of the orbit were left intact; on the left side, the levator palpebrae superioris and superior rectus muscle were partly removed, in order to lay bare the superior ophthalmic vein throughout its whole course. On the left side, in the dura mater covering the inferior surface of the small wing of the sphenoid bone (this wing having first been removed), the sphenoparietal sinus was exposed, and was traced to its termination in the cavernous sinus.

#### The Veins of the Orbit.—The Cavernous and Circular Sinuses.



<sup>1</sup> See Appendix, note <sup>282</sup>.

<sup>2</sup> This vein is a communicating branch from the *pterygoid venous plexus*.

<sup>3</sup> Sometimes distinguished as the *anterior facial vein*. See Appendix, note <sup>281</sup>.

<sup>4</sup> See Appendix, note <sup>166</sup>.

<sup>5</sup> See Appendix, note <sup>286</sup>.

<sup>6</sup> Or *laryngeal branch* of the *superior thyroid artery and vein*, respectively.

<sup>7</sup> See Appendix, note <sup>273</sup>.

<sup>8</sup> See Appendix, note <sup>287</sup>.

<sup>9</sup> See Appendix, note <sup>168</sup>.

<sup>10</sup> See Appendix, note <sup>166</sup>.

<sup>11</sup> Sometimes called the *posterior facial vein*. See Appendix, note <sup>283</sup>.

<sup>12</sup> See Appendix, note <sup>283</sup>.

FIG. 1083.—THE FORMATION OF THE COMMON FACIAL VEIN, VENA FACIALIS COMMUNIS, BY THE CONFLUENCE OF THE FACIAL (OR ANTERIOR FACIAL) VEIN, VENA FACIALIS ANTERIOR, AND THE TEMPOROMAXILLARY (OR POSTERIOR FACIAL) VEIN, VENA FACIALIS POSTERIOR (see Appendix, note <sup>283</sup>). THE PTERYGOID VENOUS PLEXUS, PLEXUS PTERYGOIDEUS, THE VEINS OF THE LOWER JAW, AND THE VEINS OF THE DURA MATER—THE MIDDLE MENINGEAL VEINS, VENÆ MENINGEÆ MEDIÆ. SEEN FROM THE RIGHT SIDE.

By the partial removal of the skull-cap (calvaria), the cranial dura mater was exposed. By the removal of the zygomatic arch, of the upper half of the ramus of the mandible (with the exception of the head of the condyle), and of the temporal and masseter muscles, the pterygoid venous plexus, plexus pterygoideus, was exposed. By the opening of the mandibular or inferior dental canal, canalis mandibulae, the inferior dental (or alveolar) artery and its plexiform companion veins were exposed.

### The Pterygoid Venous Plexus, Plexus Pterygoideus.—The Veins of the Dura Mater and of the Lower Jaw.



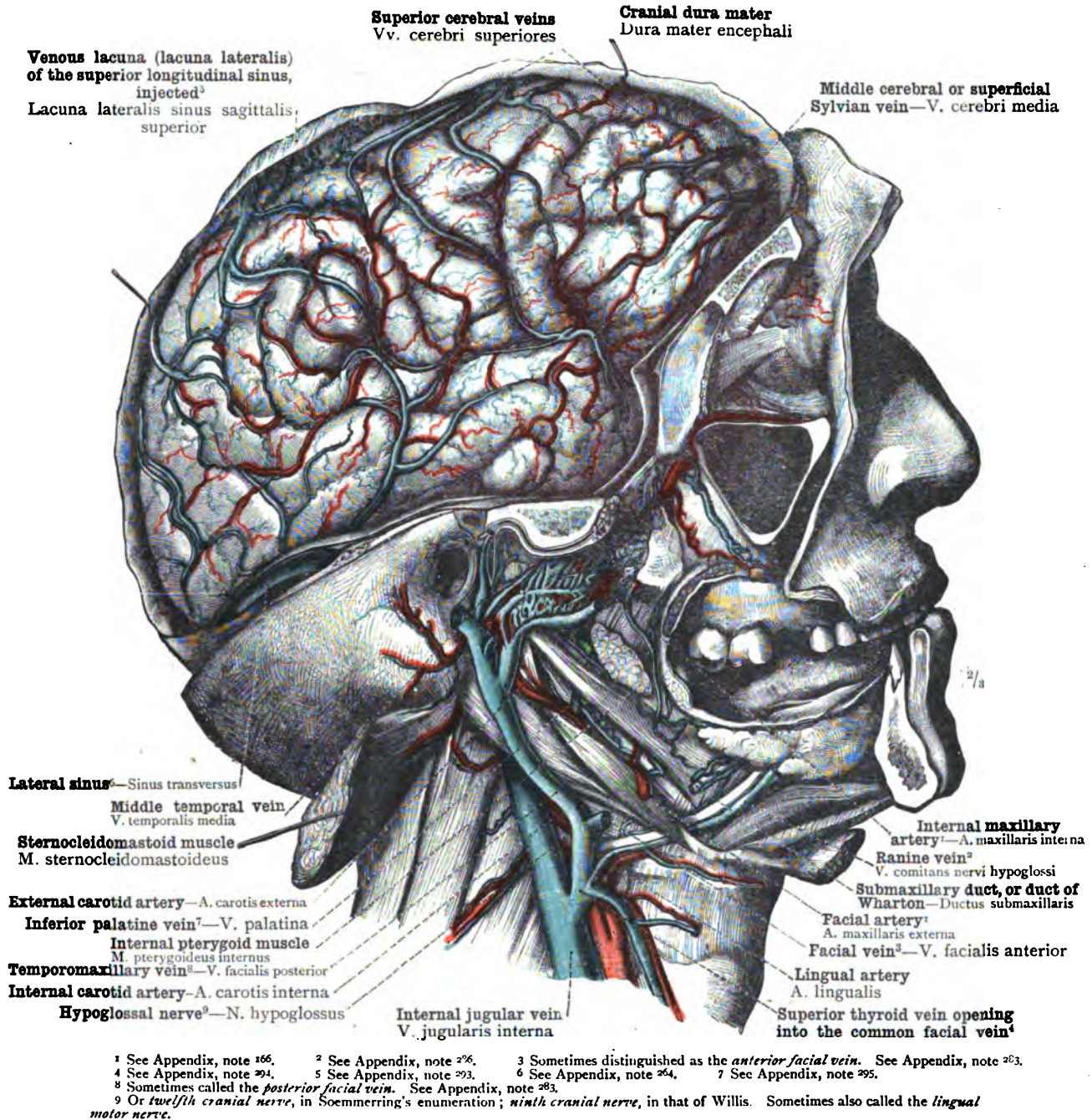
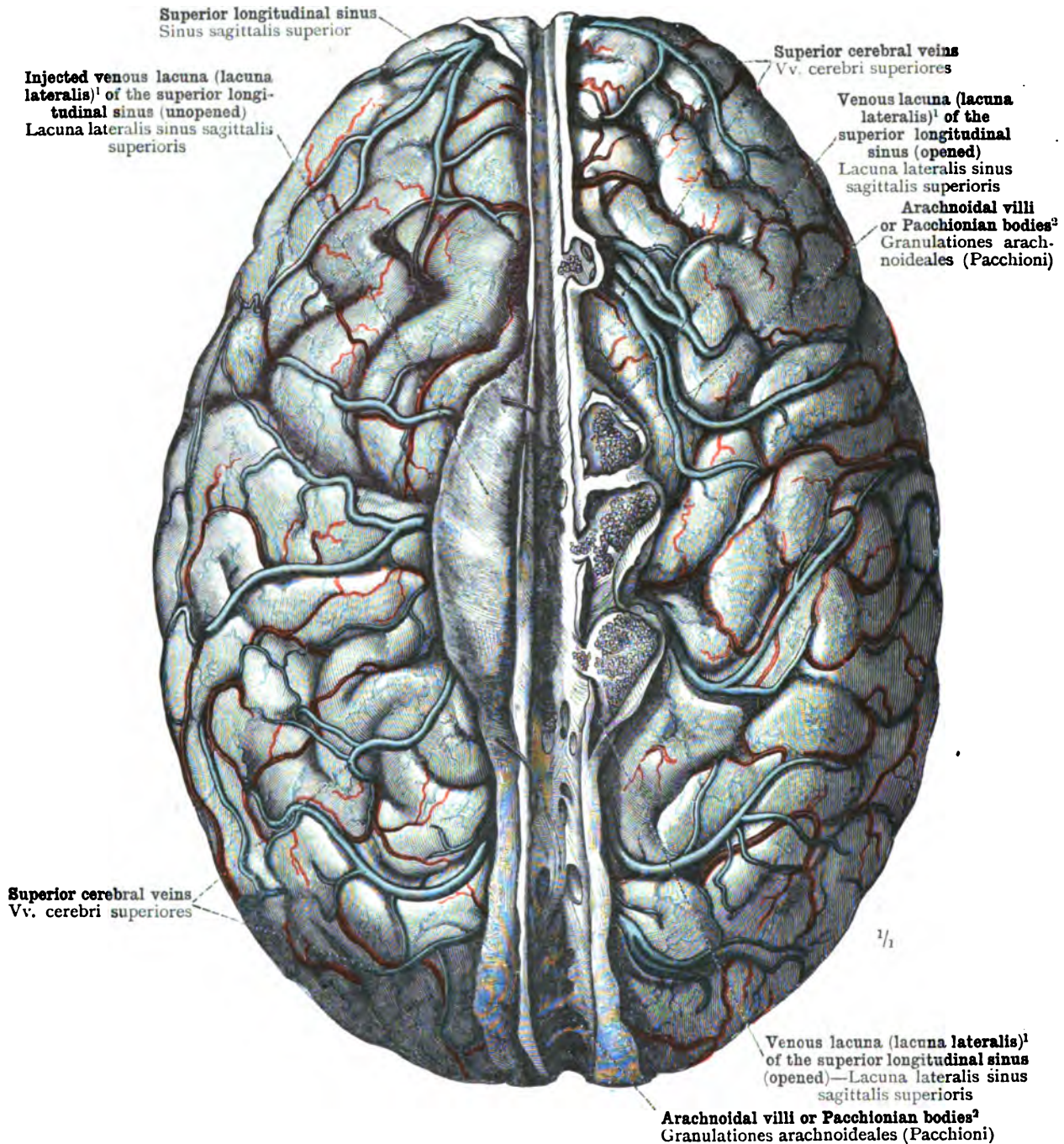


FIG. 1084.—THE VEINS OF THE CONVEXITY OF THE CEREBRAL HEMISPHERES, SUPERIOR CEREBRAL VEINS, VENÆ CEREBRI SUPERIORES, AND THEIR TERMINATION IN THE SUPERIOR LONGITUDINAL SINUS; THE MIDDLE CEREBRAL OR SUPERFICIAL SYLVIAN VEIN, VENA CEREBRI MEDIA. IN THIS SPECIMEN, THE INTERNAL MAXILLARY ARTERY RUNS ON THE OUTER INSTEAD OF ON THE INNER SURFACE OF THE EXTERNAL PTERYGOID MUSCLE, SURROUNDED BY THE DEEPER PORTION OF THE PTERYGOID VENOUS PLEXUS, PLEXUS PTERYGOIDEUS, AND THIS LATTER, ON ACCOUNT OF THE ABNORMAL COURSE OF THE ARTERY, IS MORE LARGELY DEVELOPED THAN USUAL. SEEN FROM THE RIGHT SIDE.

The skull-cap (calvaria) and the cranial dura mater having been completely removed, the veins on the convexity of the right cerebral hemisphere were exposed, and were traced to their termination in the venous lacunæ (lacunæ laterales) of the superior longitudinal sinus (see Appendix, note 293). The right half of the mandible was removed, the inter-articular disc being, however, left behind. A portion of the upper head only of the external pterygoid muscle was preserved, as also was the cranial extremity of the internal pterygoid muscle.

The Pterygoid Venous Plexus, Plexus Pterygoideus.—The Veins of the Brain.





<sup>1</sup> See Appendix, note 293.

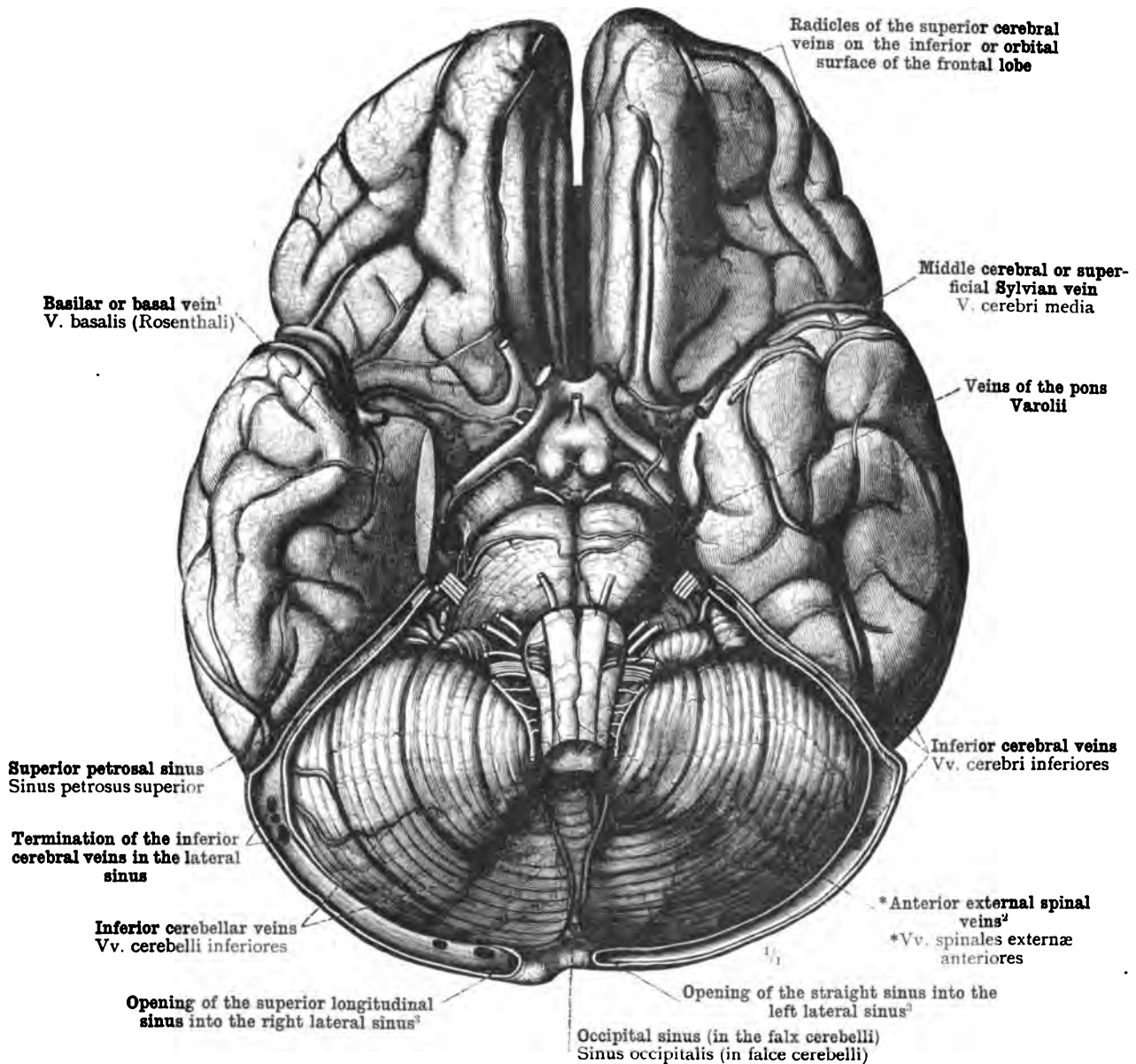
<sup>2</sup> See Appendix, note 290.

FIG. 1085.—THE SUPERIOR CEREBRAL VEINS, VENÆ CEREBRI SUPERIORES. THE SUPERIOR LONGITUDINAL SINUS, SINUS SAGITTALIS SUPERIOR; ITS VENOUS LACUNÆ (LACUNÆ LATERALES—see Appendix, note 293), AND THE RELATIONS OF THE LATTER TO THE SUPERIOR CEREBRAL VEINS AND TO THE ARACHNOID VILLI OR PACCHIONIAN BODIES (GRANULATIONES ARACHNOIDEALES PACCHIONI—see Appendix, note 290). SEEN FROM ABOVE.

The cranial dura mater was removed, except in the immediate vicinity of the superior longitudinal sinus (sinus sagittalis superior), which was opened. On the left side the injected venous lacunæ (lacunæ laterales) of this sinus are seen unopened; on the right side these lacunæ were opened from above, and the arachnoid villi or Pacchionian bodies proliferating in their interior were thus displayed.

#### Veins of the Brain.





¹ See Appendix, note 297.

² See Appendix, note 298.

³ See Appendix, notes 264 and 266.

FIG. 1086.—THE VEINS OF THE BASE OF THE BRAIN: THE MIDDLE CEREBRAL OR SUPERFICIAL SYLVIAN VEIN, VENA CEREBRI MEDIA; THE INFERIOR CEREBRAL VEINS, VENÆ CEREBRI INFERIORES; THE RADICLES AND THE TRUNK OF THE BASILAR OR BASAL VEIN, VENA BASALIS ROSENTHALI (*see Appendix, note 297*); THE VEINS OF THE PONS VAROLII, AND THE INFERIOR CEREBELLAR VEINS, VENÆ CEREBELLI INFERIORES.

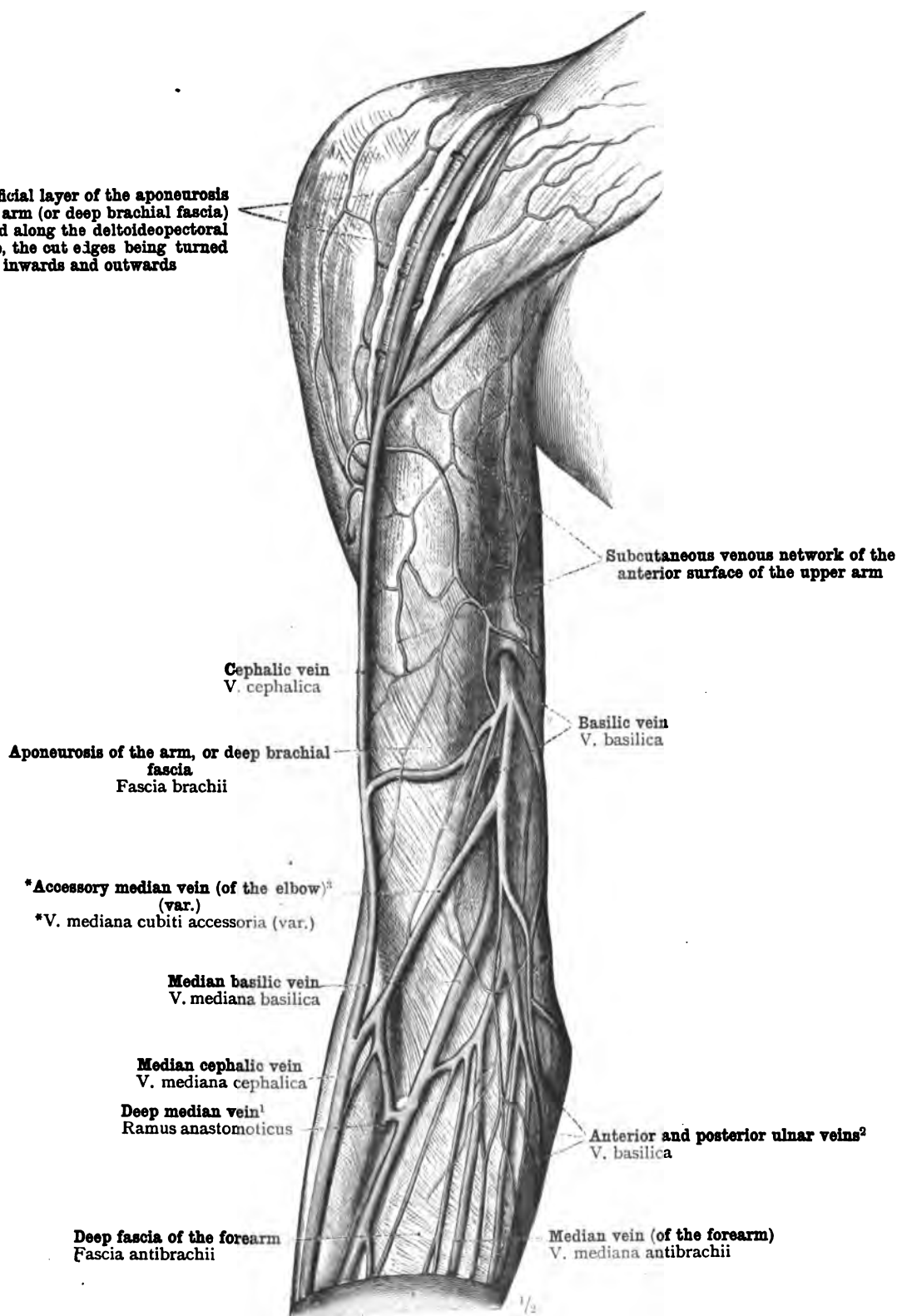
The brain was removed from the cranial cavity, together with the tentorium cerebelli, so that along the attached borders of the tentorium the lateral sinuses and the inferior petrosal sinuses were opened from below. The frontal lobes were drawn a little apart, in order to display the veins on their internal or mesial surfaces. The right temporal lobe was drawn away from the cerebral peduncle, and a sufficient portion of this lobe was removed to expose the trunk of the basilar or basal vein (vena basalis Rosenthalii).





VENÆ EXTREMITATUM  
SUPERIORUM ET INFERIORUM  
THE VEINS OF THE UPPER AND  
LOWER LIMBS

Superficial layer of the aponeurosis of the arm (or deep brachial fascia) divided along the deltoideopectoral groove, the cut edges being turned inwards and outwards



<sup>1</sup> See Appendix, note 299.

<sup>2</sup> Called by Macalister *anterior* and *posterior superficial ulnar veins*. See Appendix, note 306.

<sup>3</sup> See Appendix, note 308.

FIG. 1087.—THE SUBCUTANEOUS VEINS OF THE FRONT OF THE SHOULDER, THE FRONT OF THE ARM, AND THE FLEXURE OF THE ELBOW.

Cutaneous Veins of the Arm.



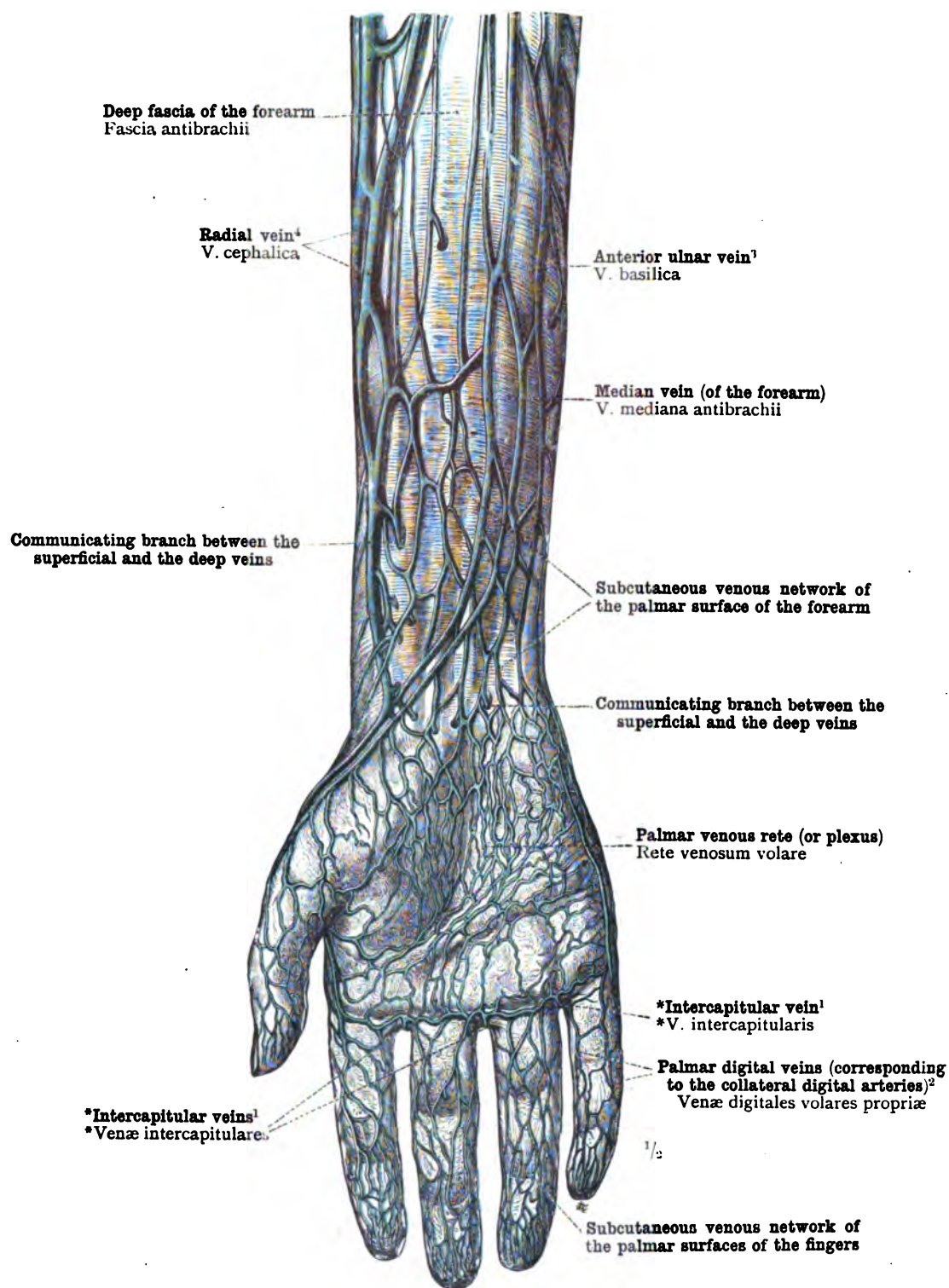
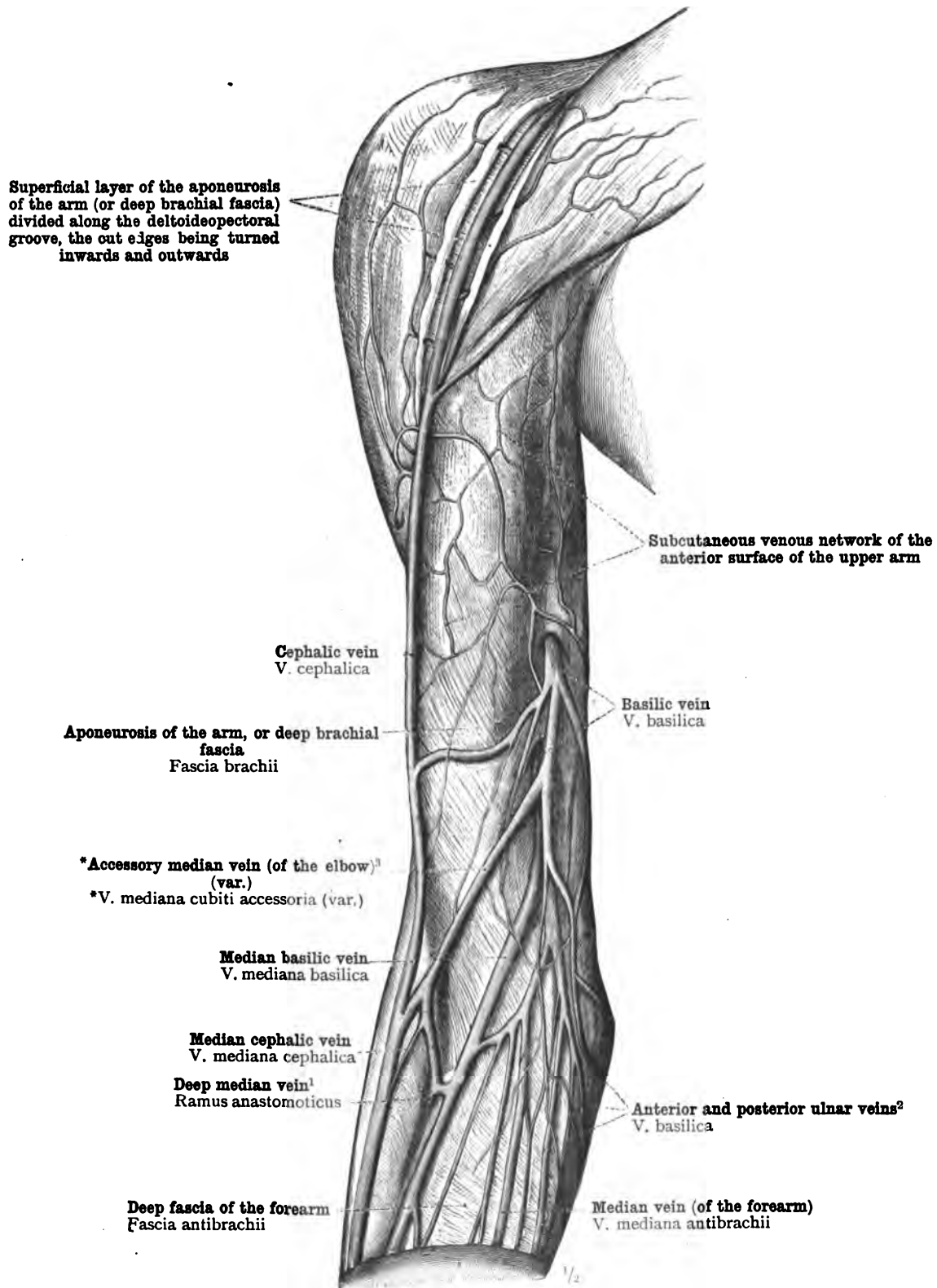
<sup>1</sup> See Appendix, note 300.<sup>3</sup> Called by Macalister the *anterior superficial ulnar vein*. See Appendix, note 306.<sup>2</sup> See Appendix, note 301.<sup>4</sup> See Appendix, note 305.

FIG. 1088.—THE SUBCUTANEOUS VEINS OF THE PALMAR SURFACE OF THE FOREARM AND HAND.

Cutaneous Veins of the Arm.



<sup>1</sup> See Appendix, note 299.

<sup>2</sup> Called by Macalister *anterior* and *posterior superficial ulnar veins*. See Appendix, note 306.

<sup>3</sup> See Appendix, note 308.

FIG. 1087.—THE SUBCUTANEOUS VEINS OF THE FRONT OF THE SHOULDER, THE FRONT OF THE ARM, AND THE FLEXURE OF THE ELBOW.

Cutaneous Veins of the Arm.



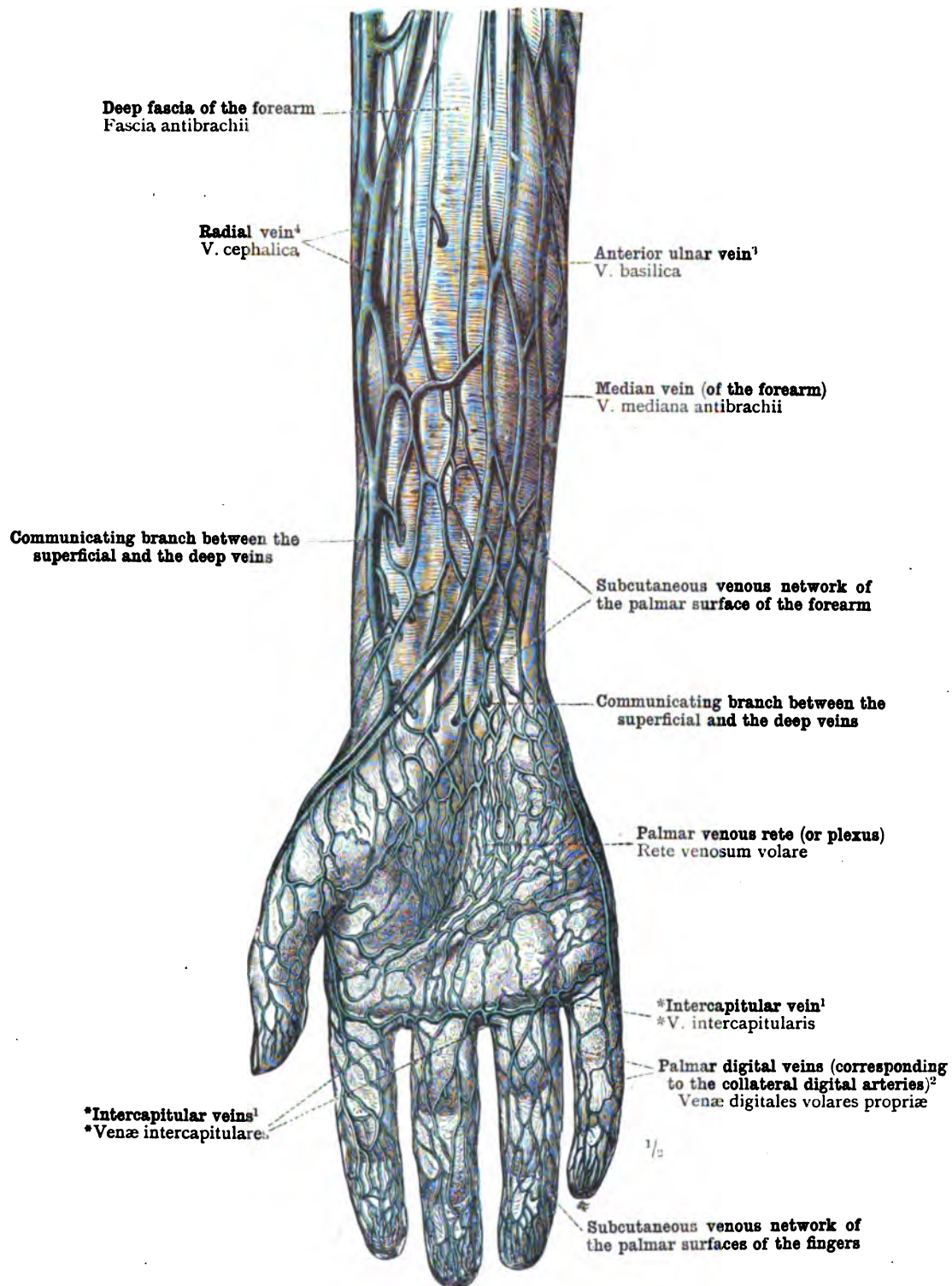
<sup>1</sup> See Appendix, note 30.<sup>3</sup> Called by Macalister the *anterior superficial ulnar vein* See Appendix, note 36.<sup>2</sup> See Appendix, note 30.<sup>4</sup> See Appendix, note 30.

FIG. 1088.—THE SUBCUTANEOUS VEINS OF THE PALMAR SURFACE OF THE FOREARM AND HAND.

Cutaneous Veins of the Arm.

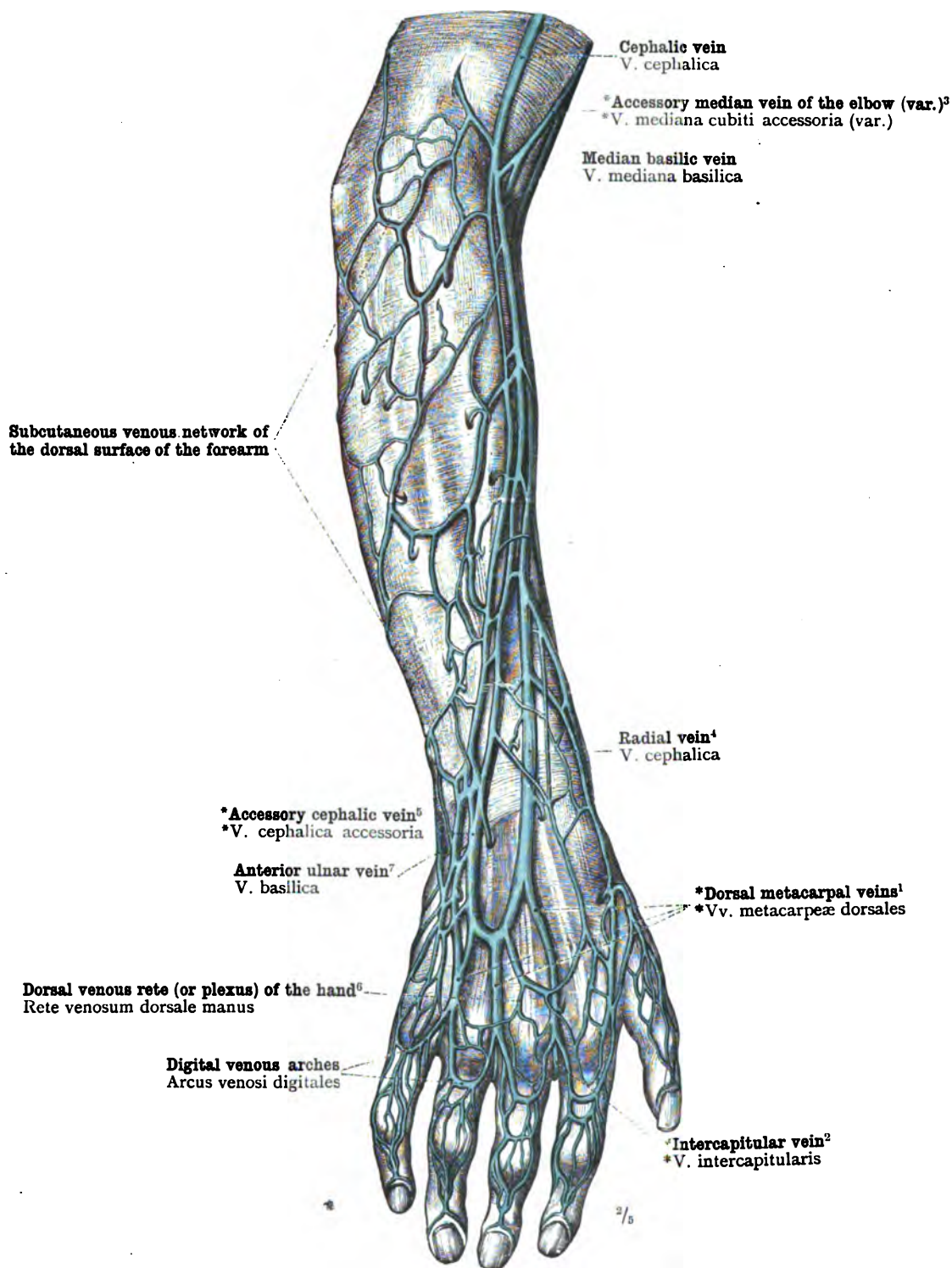
<sup>1</sup> See Appendix, note 302.<sup>4</sup> See Appendix, note 305.<sup>7</sup> Called by Macalister the *anterior superficial ulnar vein*. See Appendix, note 306.<sup>2</sup> See Appendix, note 300.<sup>5</sup> See Appendix, note 303.<sup>3</sup> See Appendix, note 308.<sup>6</sup> See Appendix, note 304.

FIG. 1089.—THE SUBCUTANEOUS VEINS OF THE DORSAL SURFACE OF THE FOREARM AND HAND.

**Cutaneous Veins of the Arm.**



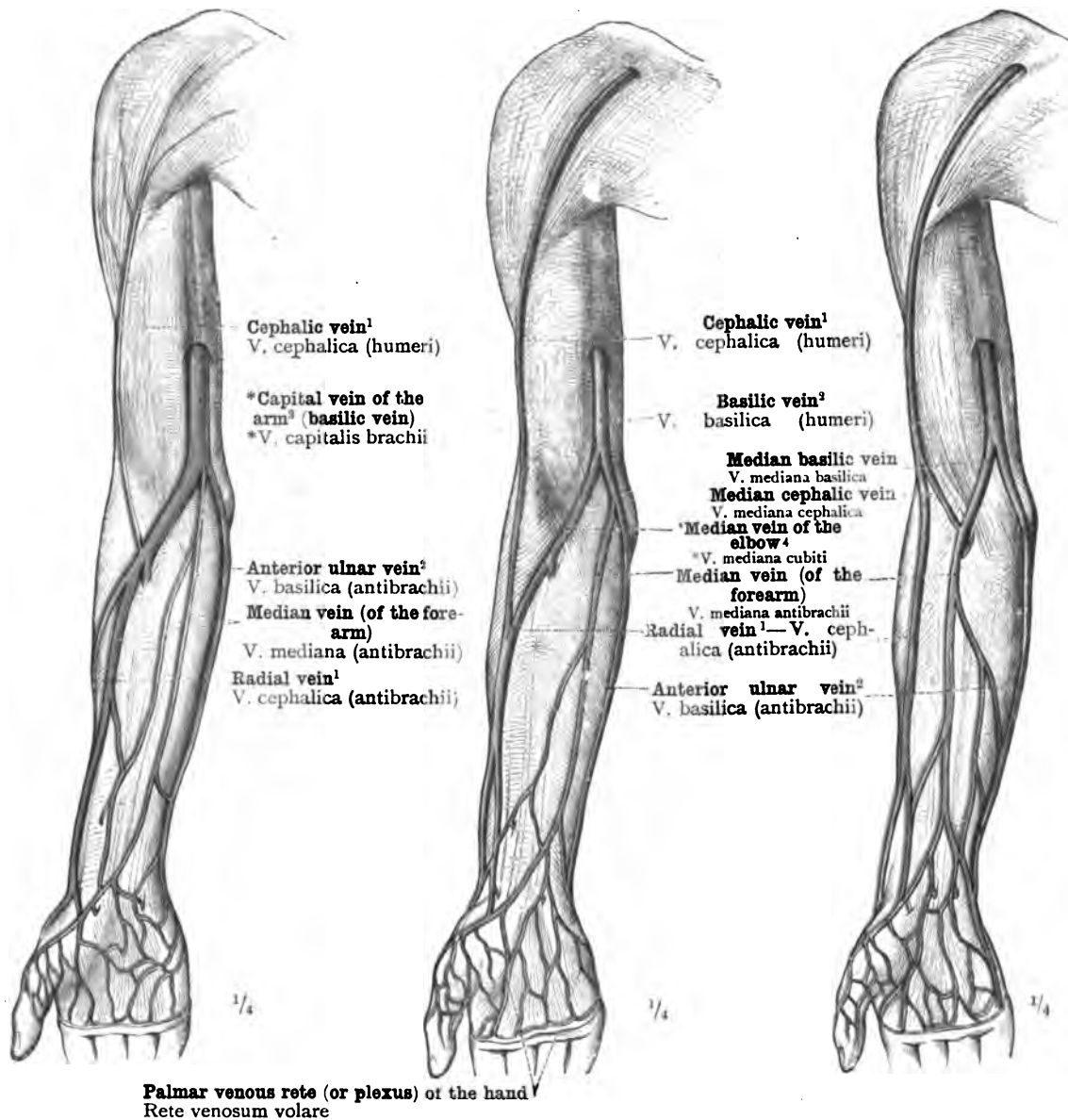
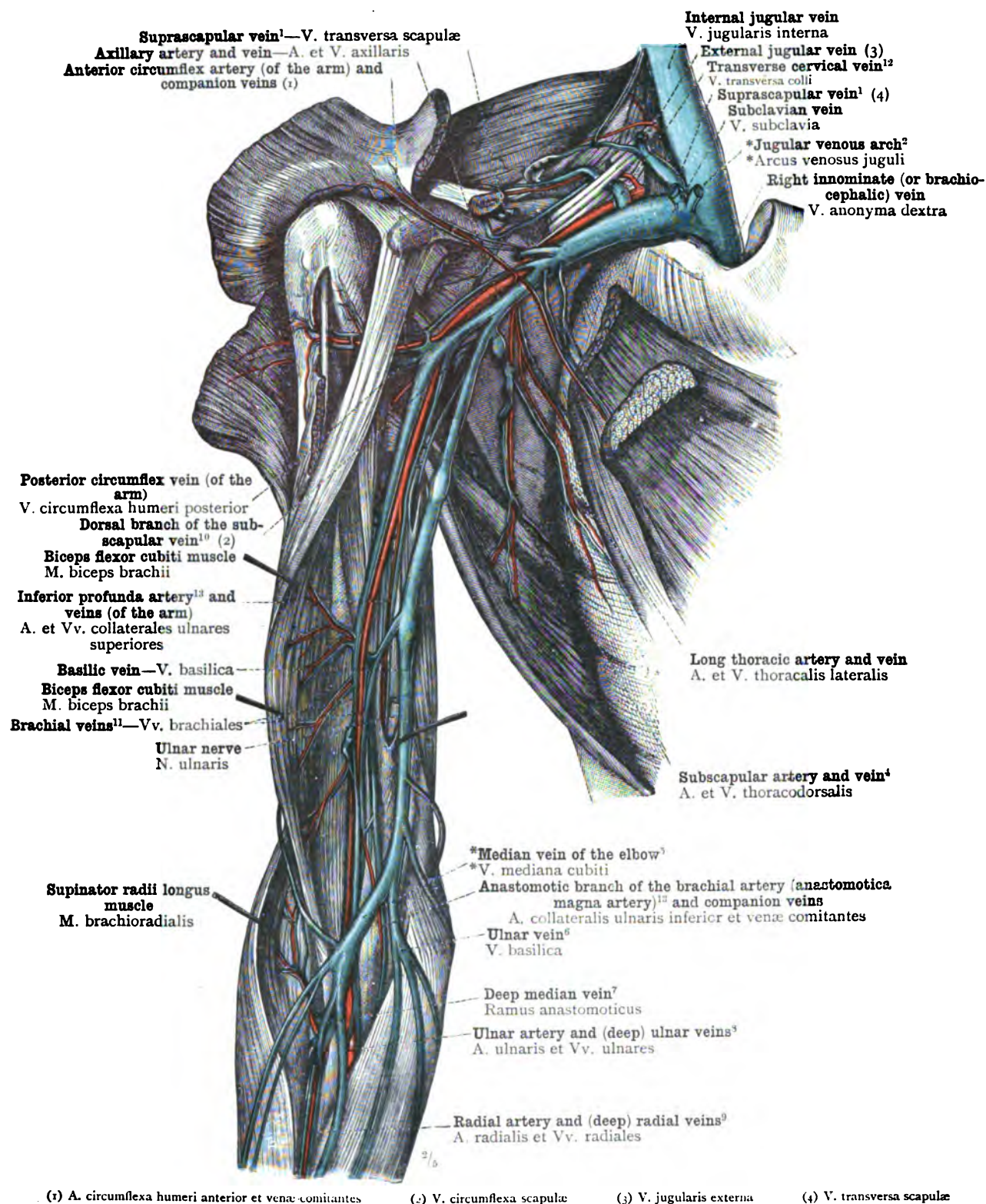
<sup>1</sup> See Appendix, note 305.<sup>2</sup> See Appendix, note 306.<sup>3</sup> See Appendix, note 307.<sup>4</sup> See Appendix, note 308.

FIG. 1090.—THE COMMONER VARIETIES OF THE SUBCUTANEOUS VEINS OF THE ARM (see Appendix, notes 307 and 308). THE \*CAPITAL VEIN OF THE ARM, \*VENA CAPITALIS BRACHII (K. von Bardleben), AND ITS COLLATERAL CHANNELS.



<sup>1</sup> Known also as the *transverse scapular* or *transverse humeral vein*.

<sup>3</sup> Known also as the *external mammary artery and vein*.

<sup>5</sup> See Appendix, note 3<sup>rd</sup>.

<sup>8</sup> Or *venæ comites of the ulnar artery*.

<sup>10</sup> Often called the *dorsalis scapulæ vein*.

<sup>12</sup> See Appendix, note 2<sup>nd</sup>.

<sup>6</sup> See Appendix, note 3<sup>rd</sup>.

<sup>2</sup> See Appendix, note 1<sup>st</sup>.

<sup>4</sup> See Appendix, note 3<sup>rd</sup>.

<sup>7</sup> See Appendix, note 3<sup>rd</sup>.

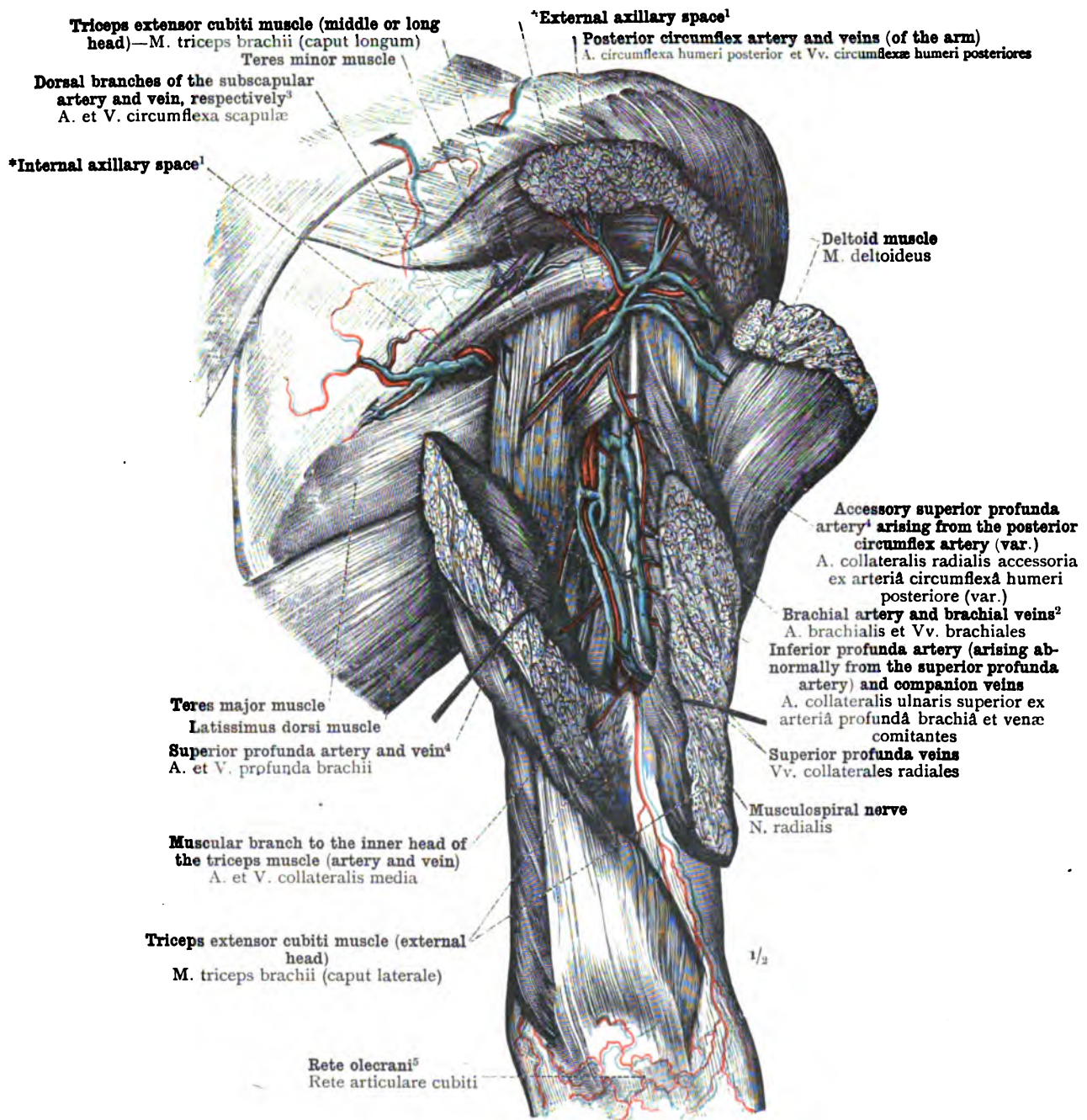
<sup>9</sup> Or *venæ comites of the radial artery*.

<sup>11</sup> Or *venæ comites of the brachial artery*.

<sup>13</sup> See Appendix, note 2<sup>nd</sup>.

FIG. 1091.—THE DEEP VEINS AND ARTERIES OF THE (\*GREATER) SUPRACLAVICULAR FOSSA (see Appendix, note 2<sup>nd</sup>), \*FOSSA SUPRACLAVICULARIS MAJOR, OF THE AXILLA, AND OF THE FRONT OF THE UPPER ARM; THE CONNEXION BETWEEN THE SUPERFICIAL AND THE DEEP VEINS OF THE FLEXURE OF THE ELBOW.





<sup>1</sup> \*Internal and \*External Axillary Spaces.—For an account of these, see note <sup>1</sup> to p. 312, in Part III. The \*internal axillary space is called by Macalister the *subscapular triangle*, and the \*external axillary space is called by Macalister the *quadrilateral space*.—*TR.*  
<sup>2</sup> Or *venae comites* of the brachial artery.  
<sup>3</sup> Known also as the *dorsalis scapulae artery and vein*, respectively.  
<sup>4</sup> See Appendix, note 222.  
<sup>5</sup> See Appendix, note 212.

FIG. 1092.—THE DEEP VEINS AND ARTERIES OF THE DORSAL SURFACE OF THE RIGHT SHOULDER AND UPPER ARM; SEEN FROM BEHIND.

A horizontal incision was made through the hinder part of the deltoid muscle somewhat above the middle of its vertical extent, the margins of the incision were turned upwards and downwards, and the teres minor muscle was drawn a little upwards, in order to expose the vessels passing through the \*axillary spaces (see note <sup>1</sup> above). The external head of the triceps extensor cubiti muscle was divided by a longitudinal incision, and the segments were drawn apart, in order to expose the ramification of the superior profunda vessels.

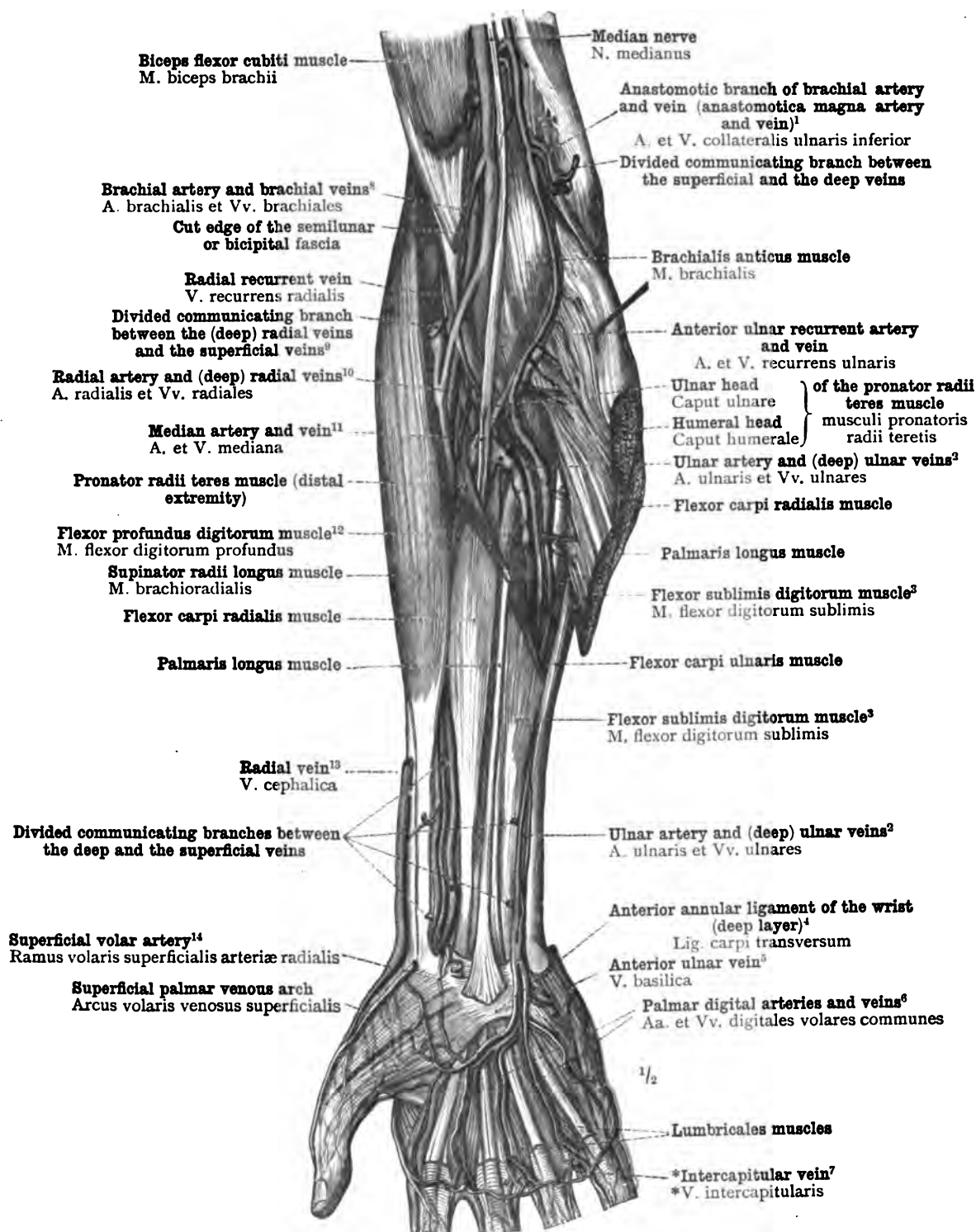
<sup>1</sup> See Appendix, note 209.<sup>4</sup> See Appendix, note 214.<sup>6</sup> See Appendix, notes 213 and 301.<sup>8</sup> Or *vena comites of the brachial artery*.<sup>10</sup> Or *vena comites of the radial artery*.<sup>12</sup> Or *flexor perforans muscle*.<sup>14</sup> Often known in England by the Latin name of *superficialis volæ artery*.<sup>2</sup> Or *vena comites of the ulnar artery*.<sup>5</sup> Or *anterior superficial ulnar vein*, according to Macalister. See Appendix, note 306.<sup>7</sup> See Appendix, note 302.<sup>9</sup> This probably represents the *deep median vein* of English anatomists.—Tr.<sup>11</sup> Called by Macalister *comes nervi mediani artery and vein*.<sup>13</sup> Or *superficial radial vein*, according to Macalister. See Appendix, note 305.<sup>3</sup> Or *flexor perforatus muscle*.

FIG. 1093.—THE DEEP VEINS AND ARTERIES OF THE FLEXURE OF THE ELBOW AND OF THE PALMAR SURFACE OF THE FOREARM; THE SUPERFICIAL PALMAR ARTERIAL AND VENOUS ARCHES.

## Deep Veins of the Forearm and Hand.



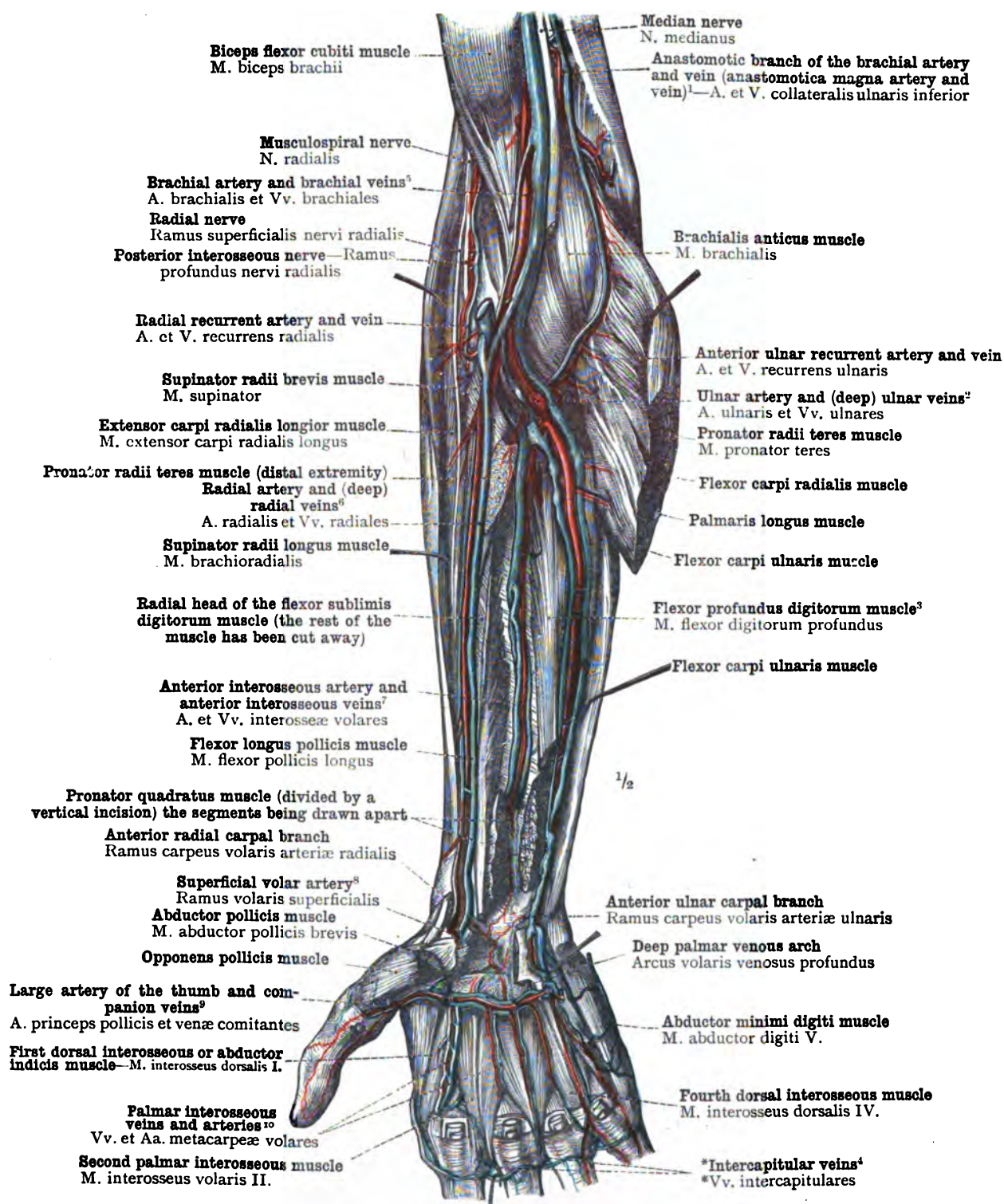
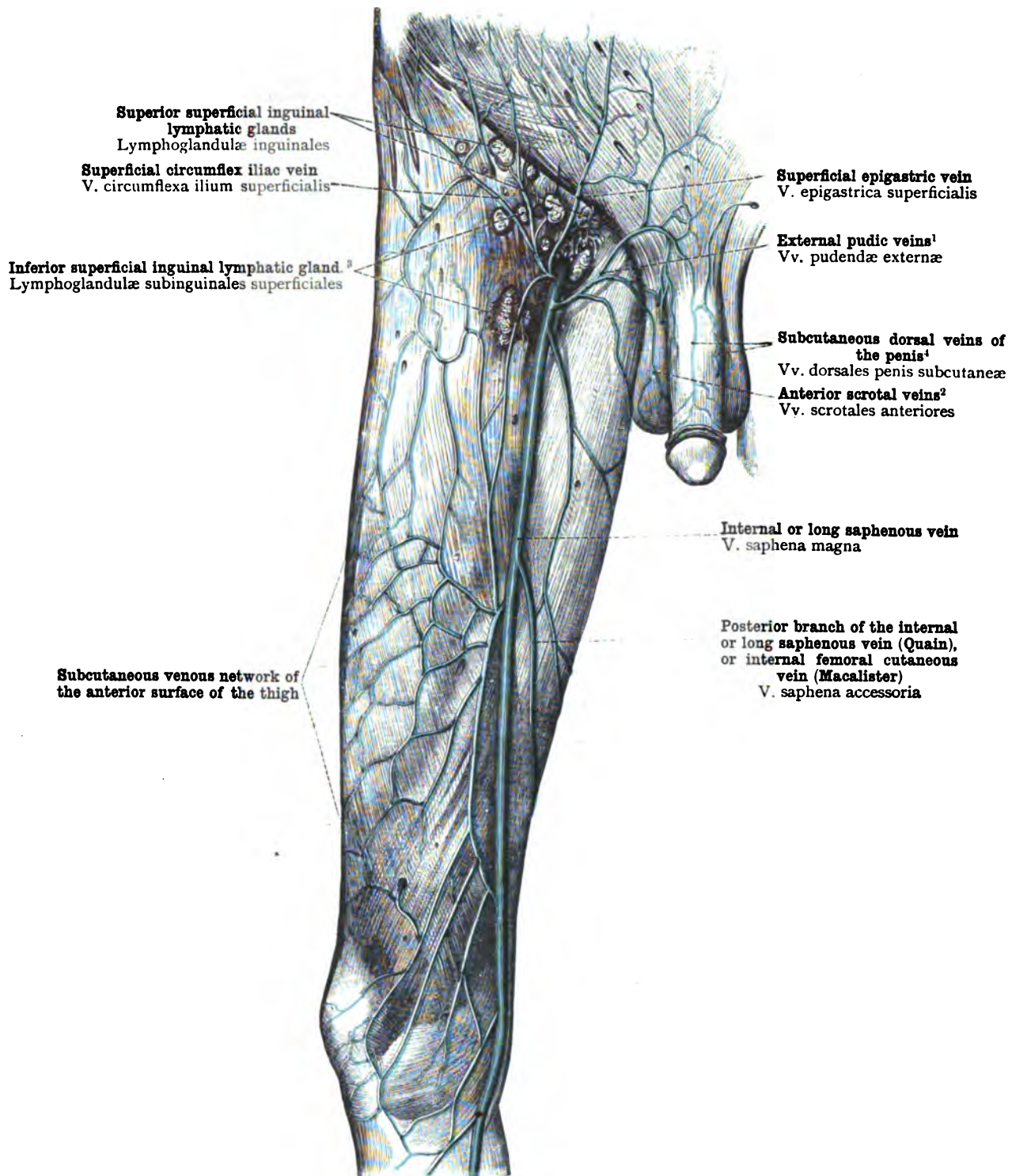


FIG. 1094.—THE DEEP VEINS AND ARTERIES OF THE FLEXURE OF THE ELBOW, AND THEIR CONNEXION WITH THE DEEP VEINS OF THE PALMAR SURFACE OF THE FOREARM; THE DEEP PALMAR ARTERIAL AND VENOUS ARCHES.

### Deep Veins of the Forearm and Hand.



<sup>1</sup> According to Macalister, *pubic* tributaries of the internal or long saphenous vein.  
<sup>3</sup> Often called the *femoral lymphatic glands*.

<sup>2</sup> See Appendix, note 138.  
<sup>4</sup> See Appendix, note 274.

FIG. 1095.—THE CUTANEOUS VEINS OF THE ANTERIOR AND INNER SIDES OF THE RIGHT THIGH, OF THE LOWER PART OF THE FRONT OF THE ABDOMEN, AND OF THE MALE EXTERNAL GENITAL ORGANS. THE INTERNAL OR LONG SAPHENOUS VEIN WITH ITS POSTERIOR BRANCH (THE INTERNAL FEMORAL CUTANEOUS VEIN, ACCORDING TO MACALISTER), VENA SAPHENA MAGNA ET VENA SAPHENA ACCESSORIA; THE SUPERFICIAL LYMPHATIC GLANDS OF THE INGUINAL AND SUBINGUINAL REGIONS.



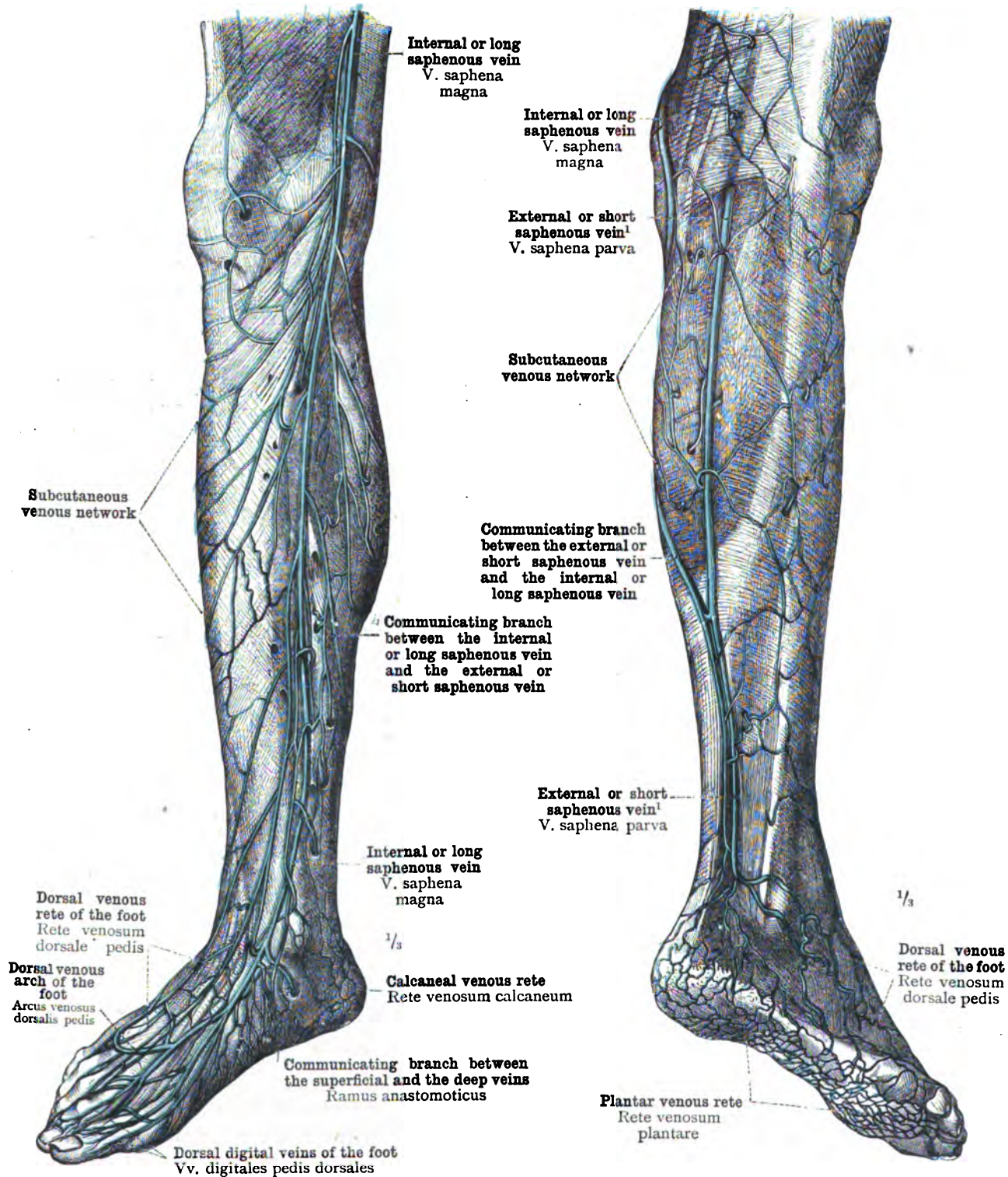
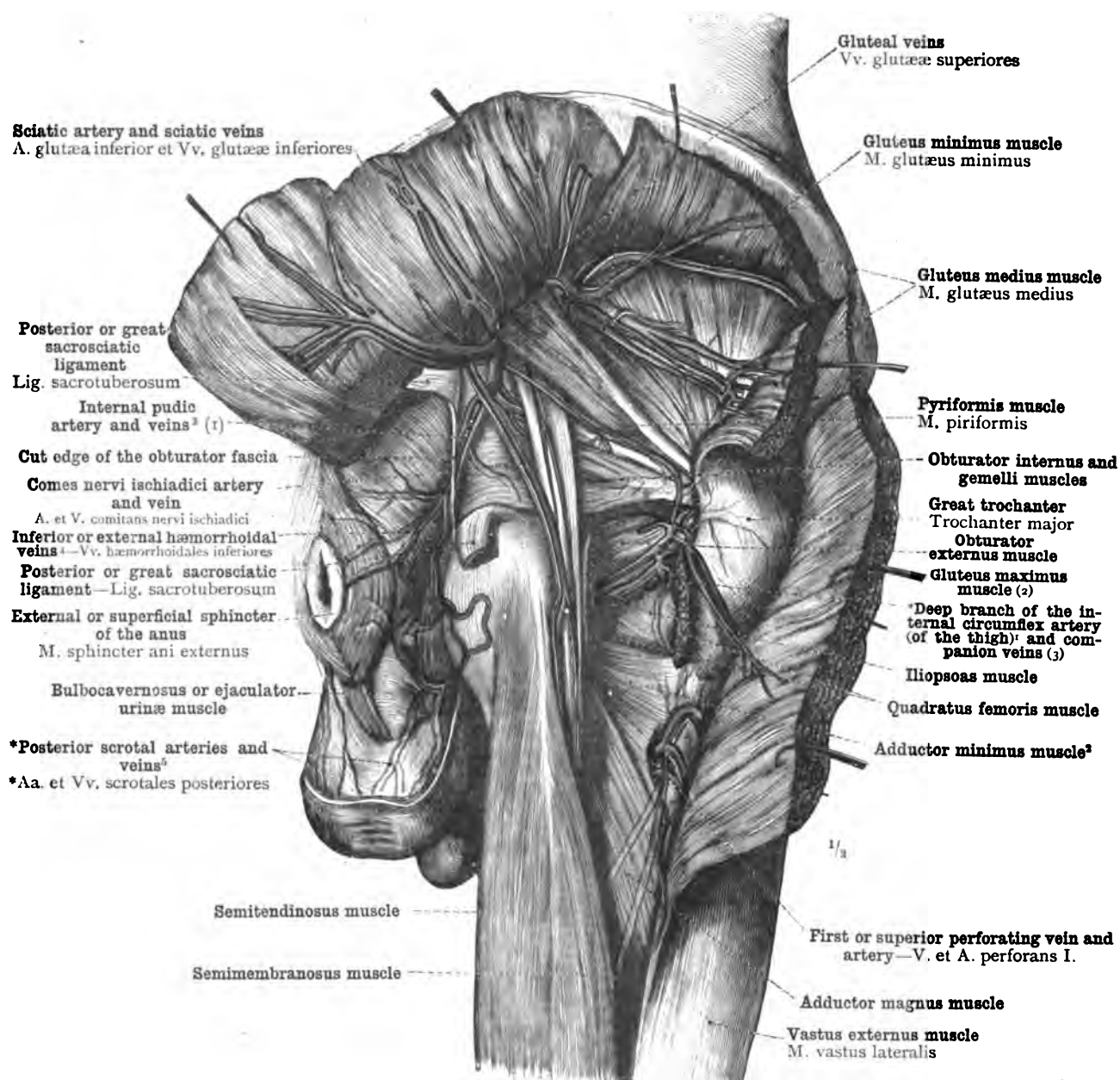


FIG. 1096.—SEEN FROM THE FRONT AND THE INNER SIDE.

FIG. 1097.—SEEN FROM BEHIND AND THE OUTER SIDE.

THE CUTANEOUS VEINS OF THE LEG AND THE FOOT: THE INTERNAL OR LONG SAPHENOUS VEIN, VENA SAPHENA MAGNA, AND THE EXTERNAL OR SHORT SAPHENOUS VEIN, VENA SAPHENA PARVA, WITH THE TRIBUTARIES OF THESE VEINS.

<sup>1</sup> Called by Macalister the *sural vein*.



(1) A. et Vv. pudendæ internæ

(2) M. glutæus maximus

(3) \*Ramus profundus arteriæ circumflexæ femoris mediæ et venæ comitantes

<sup>1</sup> The so-called \*deep branch of the internal circumflex artery is by English anatomists regarded as the continuation of that vessel itself. See Appendix, note <sup>234</sup>.

<sup>3</sup> See Appendix, note <sup>139</sup>.

<sup>4</sup> Called by Macalister the *anal veins*.

<sup>2</sup> See note <sup>2</sup> to p. 644.

<sup>5</sup> See Appendix, note <sup>138</sup>.

FIG. 1098.—THE DEEP VEINS AND ARTERIES OF THE RIGHT GLUTEAL REGION AND ISCHIORECTAL FOSSA, WITH THE SUPERFICIAL VESSELS OF THE POSTERIOR SURFACE OF THE SCROTUM.

The gluteus maximus and gluteus medius muscles and the posterior or great sacrosciatic ligament were cut across and the segments were drawn apart, and the greater part of the quadratus femoris muscle was cut away.

### Deep Veins of the Gluteal Region.



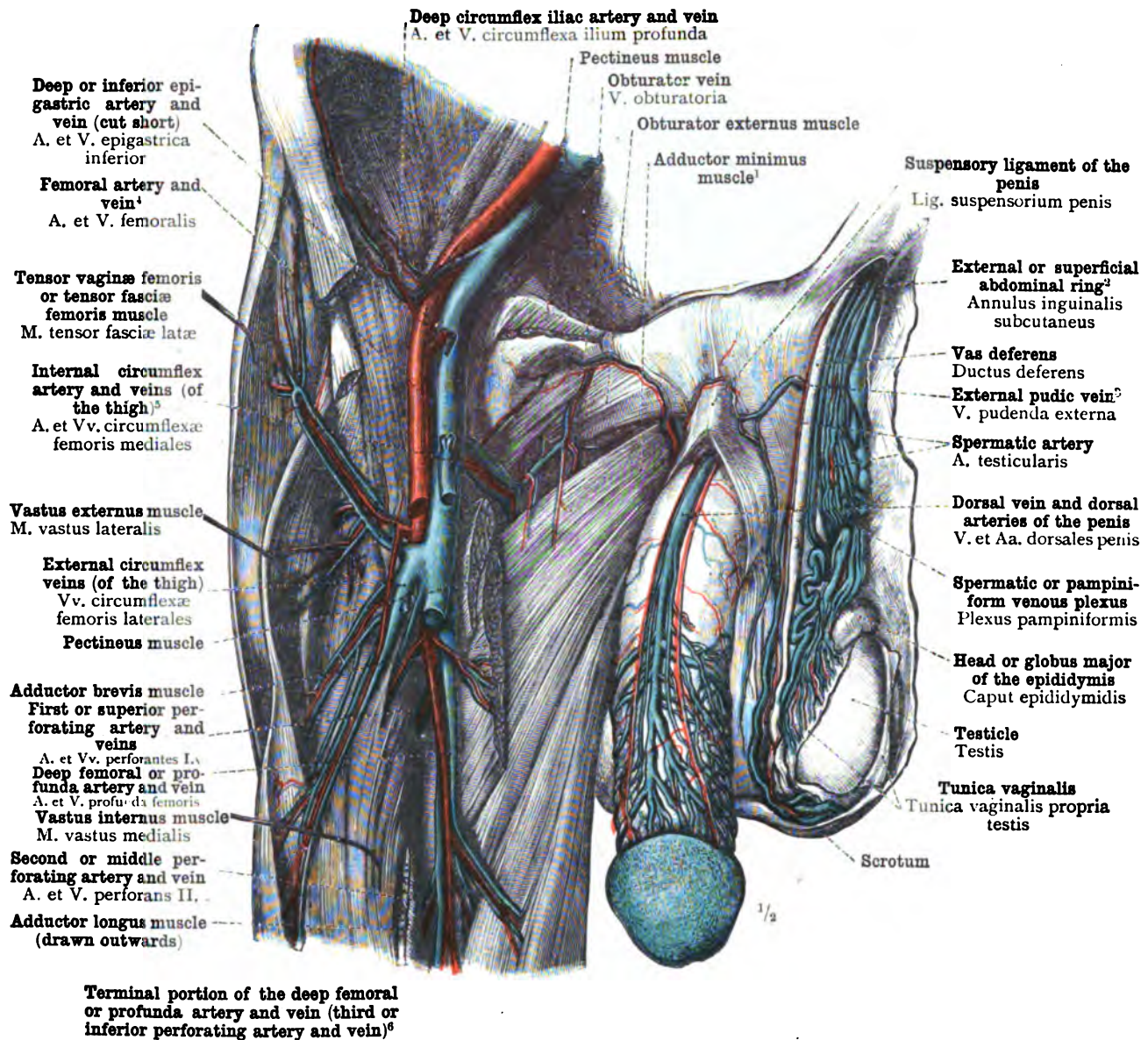
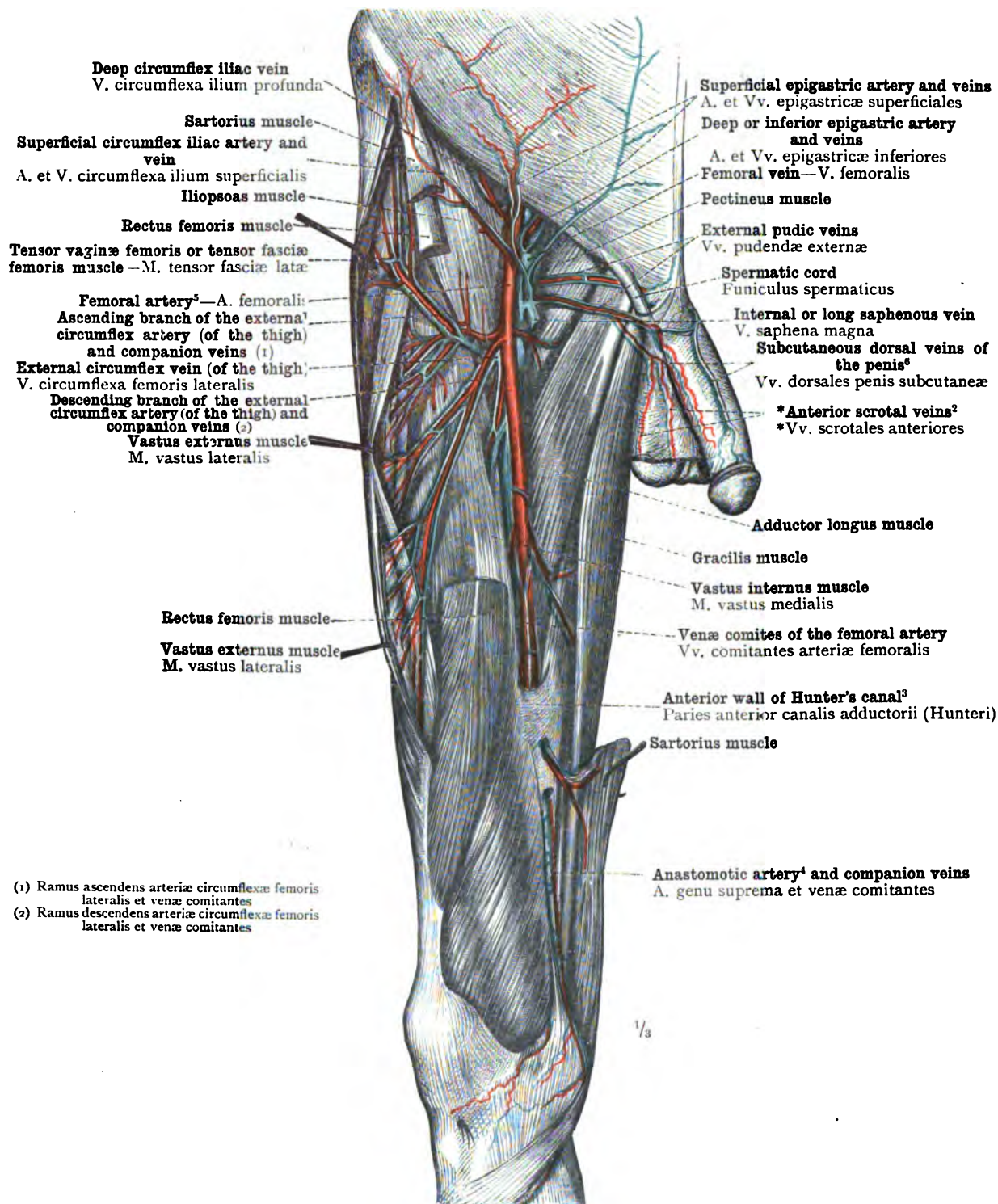
<sup>1</sup> See note 2 to p. 644.<sup>4</sup> See Appendix, note 223.<sup>2</sup> Or external inguinal aperture.<sup>5</sup> See Appendix, note 224.<sup>3</sup> Called by Macalister *pubic vein*.<sup>6</sup> See Appendix, note 312.

FIG. 1099.—THE DISTRIBUTION OF THE DEEP FEMORAL OR PROFUNDA VEIN AND ARTERY, VENA ET ARTERIA PROFUNDA FEMORIS; OF THE OBTURATOR VESSELS, VASA OBTURATORIA; OF THE DORSAL VESSELS OF THE PENIS; AND OF THE VEINS OF THE TESTICLE.

The anterior wall of the abdomen was removed, together with Poupart's ligament (the superficial crural arch); the pectineus, adductor brevis, and adductor longus muscles were cut away close to their origin, in order to expose the obturator and the internal circumflex vessels. On the right side, the testis and the spermatic cord were removed; while on the left side these organs were retained, and the spermatic or pampiniform venous plexus was dissected out. On the penis, which was injected both by way of the dorsal vein and by penetration of one of the corpora cavernosa, the deep-seated dorsal vessels were exposed.



<sup>1</sup> Or *pubic veins*, according to Macalister.

<sup>4</sup> See Appendix, note 226.

<sup>2</sup> See Appendix, note 138.

<sup>5</sup> See Appendix, note 223.

<sup>3</sup> See Appendix, note 228.

<sup>6</sup> See Appendix, note 274.

FIG. 1100.—THE FEMORAL ARTERY AND VEIN, ARTERIA ET VENA FEMORALIS, UNTIL THEIR ENTRANCE INTO HUNTER'S CANAL (see Appendix, note 223), AND THE DISTRIBUTION OF THE EXTERNAL CIRCUMFLEX ARTERY AND VEIN (OF THE THIGH), ARTERIA ET VENA CIRCUMFLEXA FEMORIS LATERALIS. RIGHT THIGH, SEEN FROM BEFORE.

The sartorius and rectus femoris muscles were in part removed, and the tensor vaginæ femoris and vastus externus muscles were drawn outwards.

### Deep Veins of the Front of the Thigh.



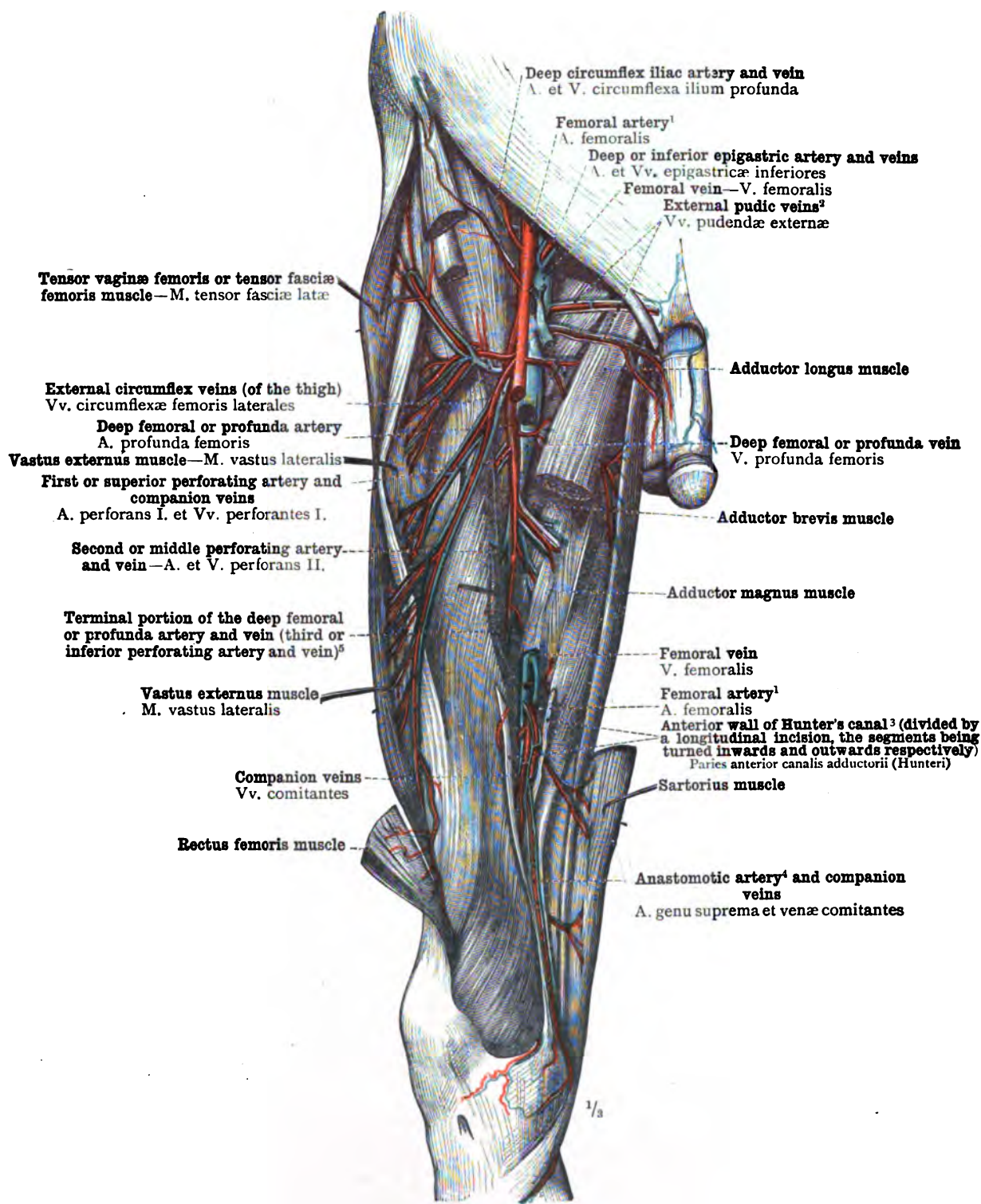
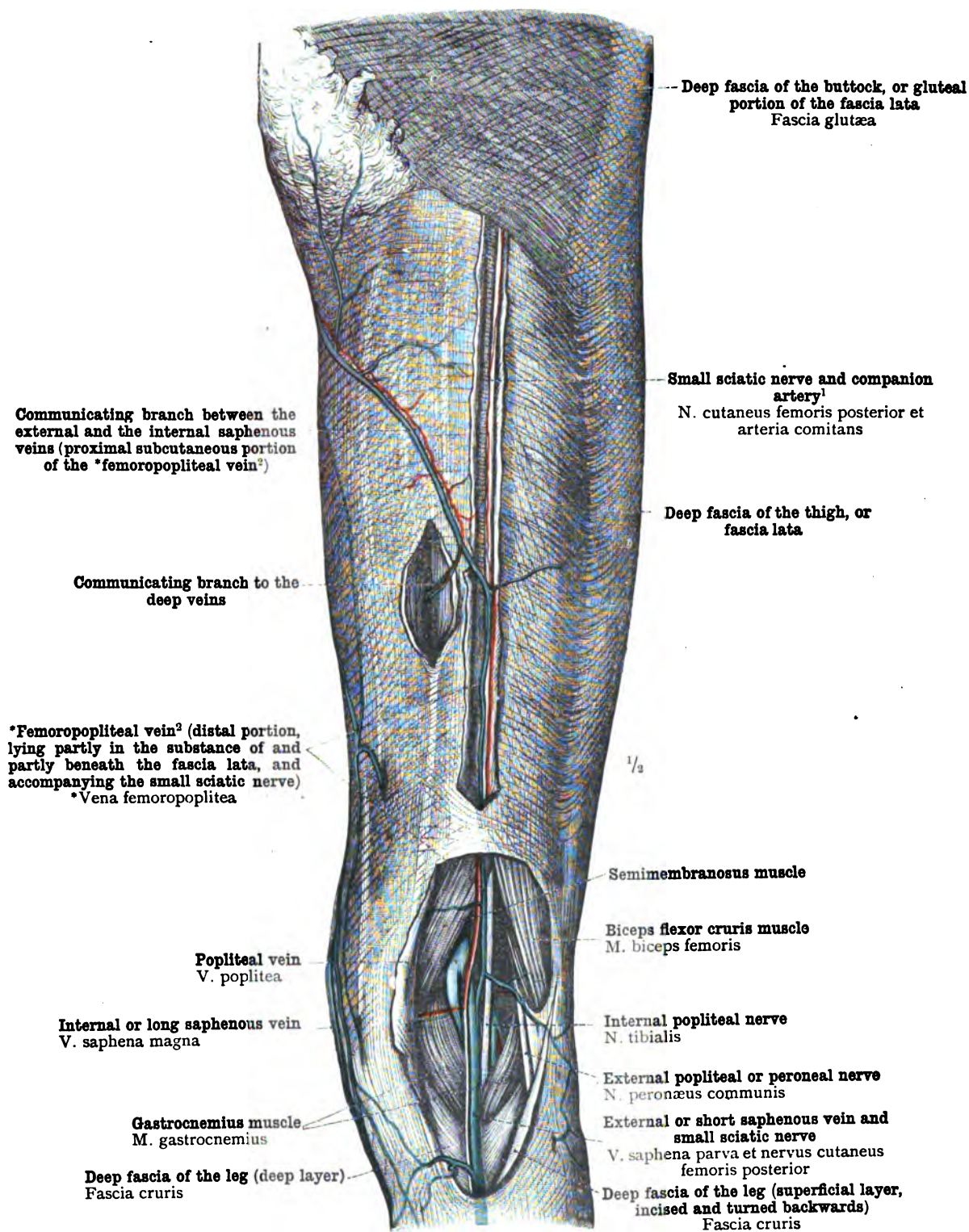
<sup>1</sup> See Appendix, note 223.<sup>4</sup> See Appendix, note 226.<sup>2</sup> Called by Macalister the *pubic veins*.<sup>5</sup> See Appendix, note 312.<sup>3</sup> See Appendix, note 228.

FIG. 1101.—THE DEEP FEMORAL OR PROFUNDA ARTERY AND ITS COMPANION VEINS; RIGHT THIGH, SEEN FROM BEFORE.

In the preparation shown in Fig. 1100, a portion of the (superficial) femoral artery and vein were excised, part of the adductor longus muscle was removed, and Hunter's canal was opened from before.



<sup>1</sup> This artery is one of the *cutaneous* branches of the *sciatic artery*.—Tr.

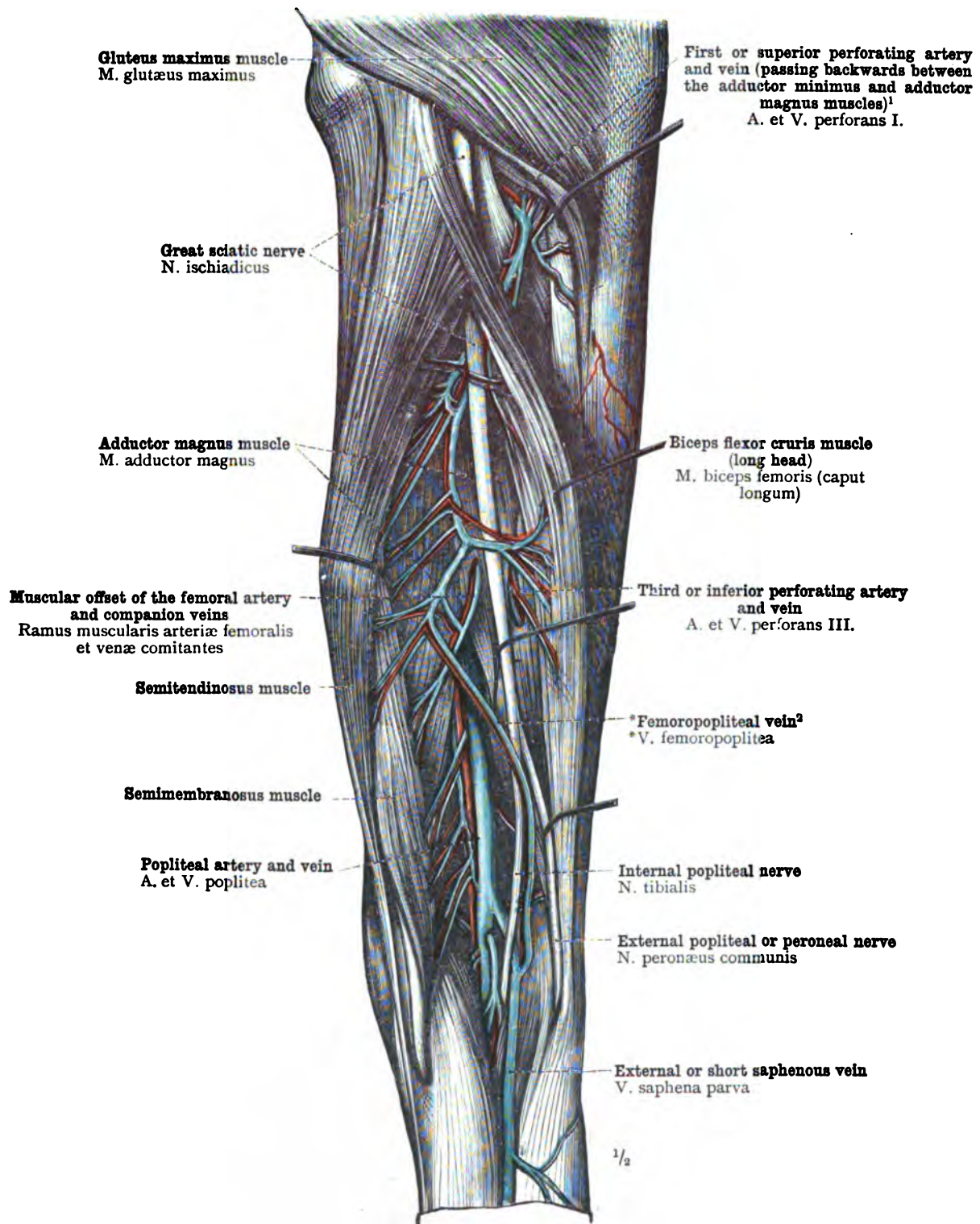
<sup>2</sup> See Appendix, note 313.

FIG 1102.—THE \*FEMOROPOPLITEAL VEIN, \*VENA FEMOROPOPLITEA (see Appendix, note 313), OF THE RIGHT THIGH.

The small sciatic nerve (nervus cutaneus femoris posterior), with its companion vessels, was exposed in its course between the layers of the fascia lata along the middle of the back of the thigh; and in the region of the ham the deep fascia was entirely removed.

### Superficial Veins of the Back of the Thigh.





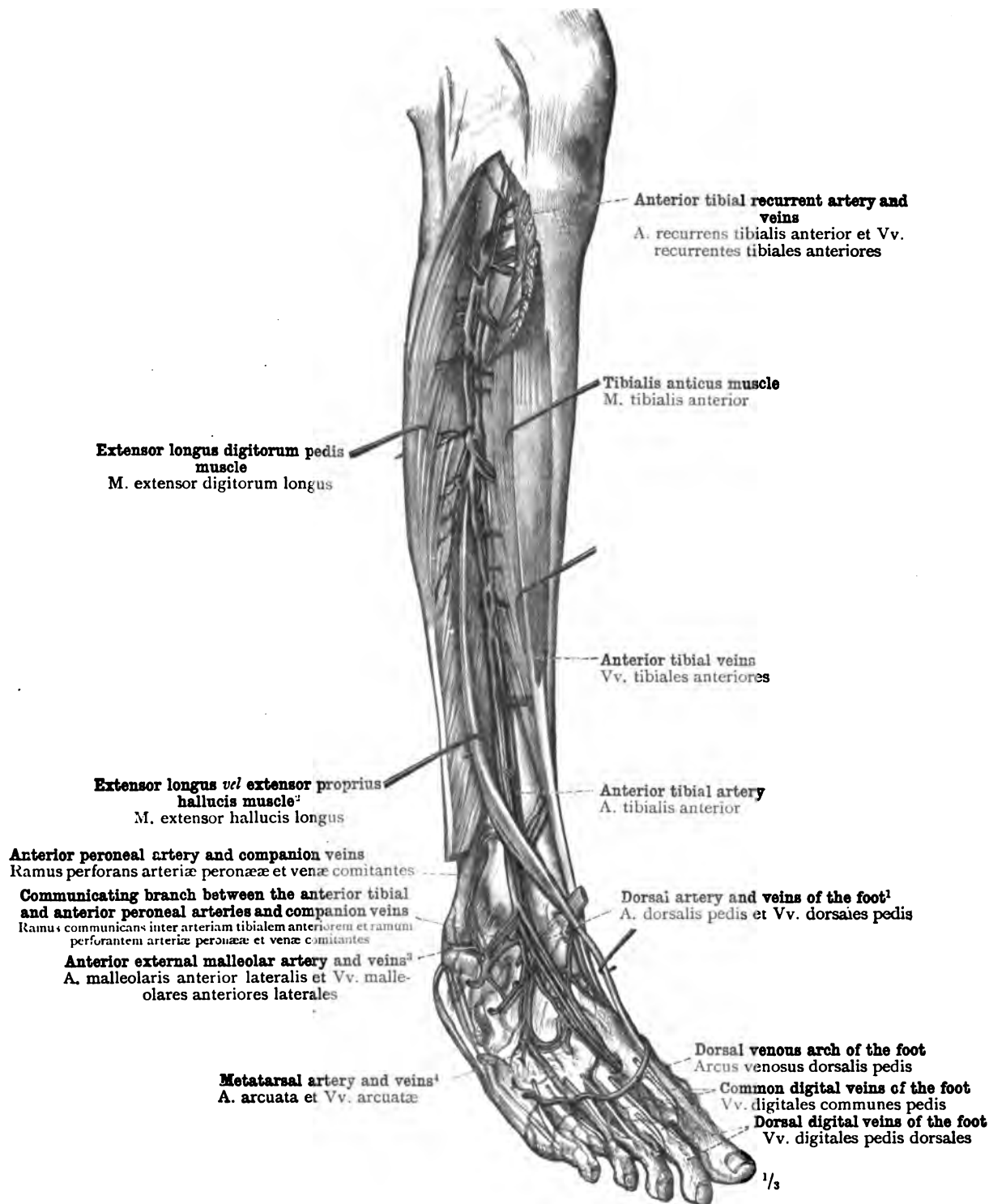
<sup>1</sup> See note <sup>2</sup> to p. 644.

<sup>2</sup> See Appendix, note 3<sup>13</sup>.

**FIG. 1103.—THE PERFORATING VEINS, VENÆ PERFORANTES, AND THEIR COMMUNICATION WITH THE EXTERNAL OR SHORT SAPHENOUS VEIN, DISSECTED OUT AT THE BACK OF THE RIGHT THIGH.**

The biceps flexor cruris muscle was drawn as far outwards, and the inner hamstring muscles were drawn as far inwards, as possible.

### Deep Veins of the Back of the Thigh.



<sup>1</sup> Often known in England by their Latin names of *dorsalis pedis artery* and *veins*.

<sup>2</sup> See note <sup>2</sup> to p. 364, in Part III.

<sup>3</sup> See Appendix, note <sup>236</sup>.

<sup>4</sup> See Appendix, note <sup>239</sup>.

FIG. 1104.—THE MUSCLES OF THE FRONT OF THE LEG WERE SEPARATED, THE PROXIMAL PORTION OF THE TIBIALIS ANTICUS MUSCLE WAS DETACHED FROM THE BONE AND TURNED FORWARDS, THE EXTENSOR BREVIS DIGITORUM PEDIS MUSCLE AND THE TENDONS OF THE EXTENSOR LONGUS DIGITORUM PEDIS MUSCLE WERE REMOVED FROM THE DORSUM OF THE TARSUS.



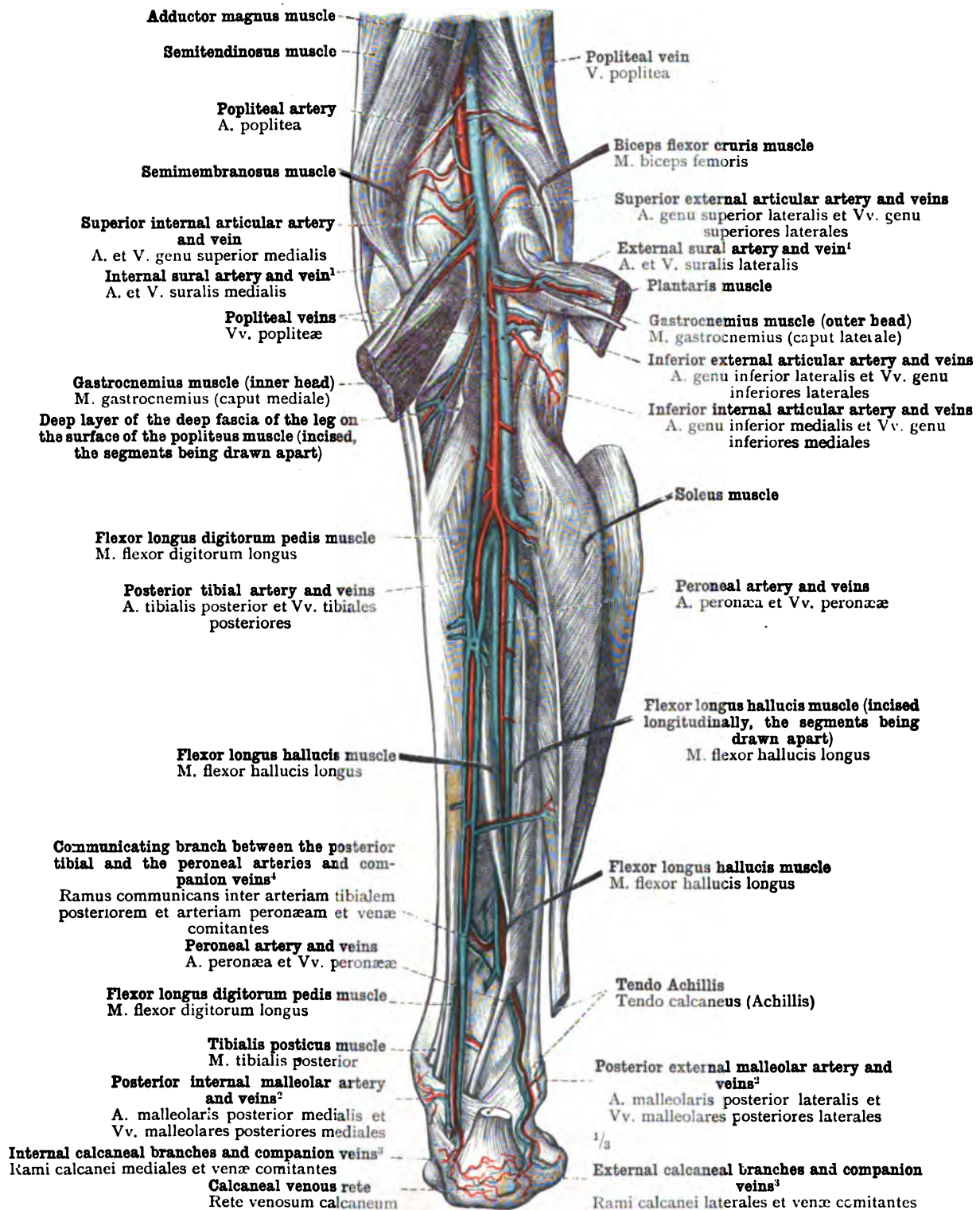
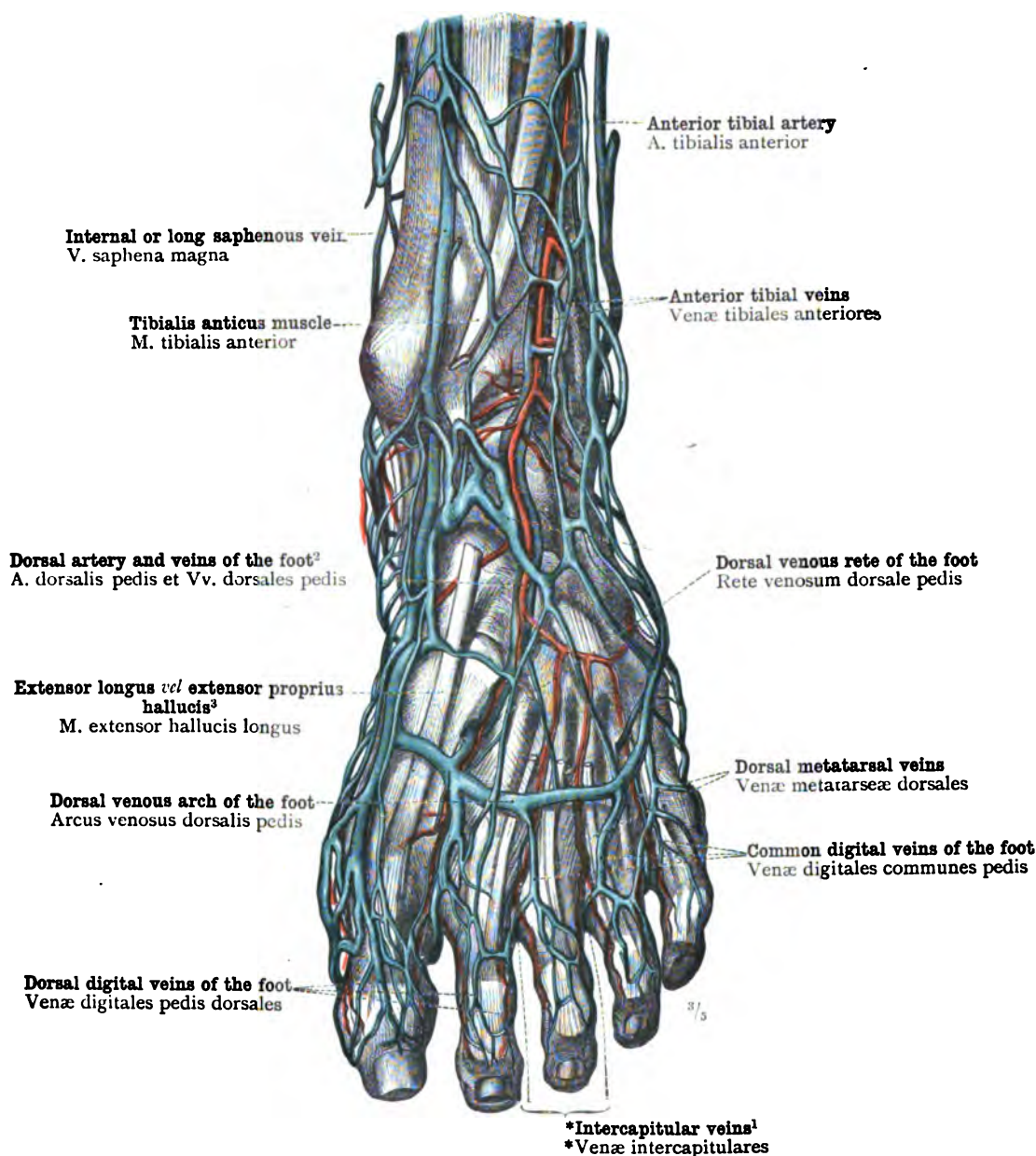
<sup>1</sup> See Appendix, note 232.<sup>2</sup> See Appendix, note 235.<sup>3</sup> See Appendix, note 242.<sup>4</sup> See Appendix, note 247.

FIG. 1105.—THE HAMSTRING MUSCLES AND THE PROXIMAL EXTREMITIES (INNER AND OUTER) OF THE GASTROCNEMIUS MUSCLE WERE DRAWN APART, THE TENDO ACHILLIS WAS CUT ACROSS TRANSVERSELY A LITTLE ABOVE THE TUBEROSITY OF THE CALCANEUM, THE SOLEUS MUSCLE WAS DETACHED FROM THE TIBIA AND WAS DRAWN OUTWARDS WITH THE GASTROCNEMIUS MUSCLE; THE FLEXOR LONGUS HALLUCIS MUSCLE WAS INCISED LONGITUDINALLY AND THE SEGMENTS WERE DRAWN APART



<sup>1</sup> The *\*intercapitular veins* of the foot are homologous with those of the hand. See Appendix, note 300.

<sup>2</sup> Often known in England by their Latin name of *dorsalis pedis artery and veins*.

<sup>3</sup> See note 2 to p. 364, in Part III.

FIG. 1106.—THE SUPERFICIAL VEINS AND THE DEEP VEINS AND ARTERIES OF THE DORSUM OF THE FOOT: THE DORSAL DIGITAL VEINS OF THE FOOT, VENÆ DIGITALES PEDIS DORSALES, AND THE COMMON DIGITAL VEINS OF THE FOOT, VENÆ DIGITALES COMMUNES PEDIS; THE DORSAL METATARSAL VEINS, VENÆ METATARSEÆ DORSALES, AND THE \*INTERCAPITULAR VEINS (OF THE FOOT), \*VENÆ INTERCAPITULARES (PEDIS); THE DORSAL VENOUS ARCH OF THE FOOT, ARCUS VENOSUS DORSALIS PEDIS, AND THE DORSAL VENOUS RETE OF THE FOOT, RETE VENOSUM DORSALE PEDIS; THE CONTINUITY OF THE DORSAL VEINS OF THE FOOT, VENÆ DORSALES PEDIS, WITH THE ANTERIOR TIBIAL VEINS, VENÆ TIBIALES ANTERIORES; THE INTERNAL OR LONG SAPHENOUS VEIN, VENA SAPHENA MAGNA.

Of the muscles of the front of the leg, the tibialis anticus muscle only was retained; on the dorsum of the foot, the extensor brevis digitorum pedis muscle was removed, but the distal extremities of the tendons of the extensor longus digitorum pedis muscle were retained.

### Veins of the Dorsum of the Foot.



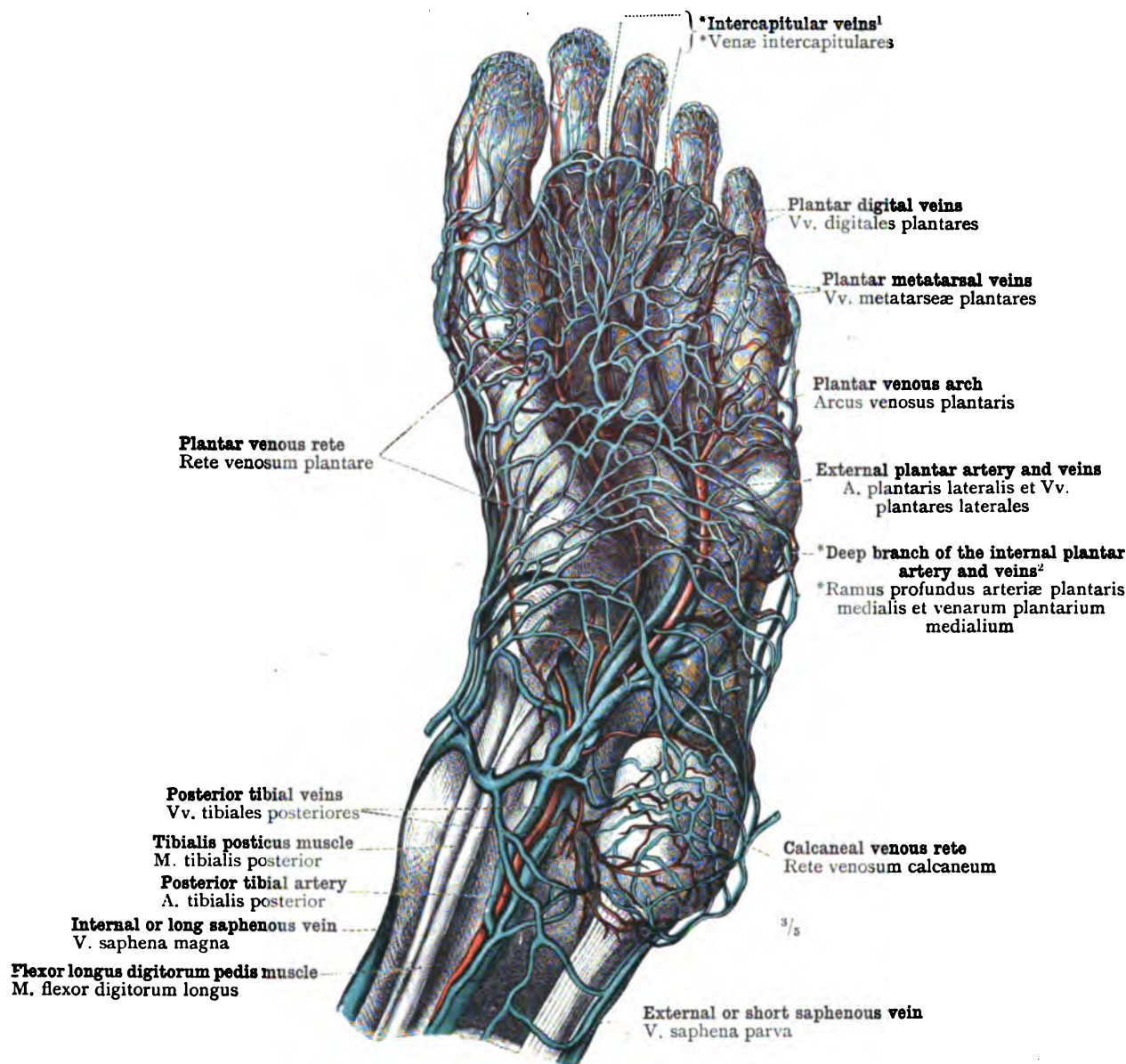
<sup>1</sup> See Appendix, note 300.<sup>2</sup> See Appendix, note 250.

FIG. 1107.—THE SUPERFICIAL VEINS AND THE DEEP VEINS AND ARTERIES OF THE SOLE OF THE FOOT: THE PLANTAR VENOUS RETE, RETE VENOSUM PLANTARE, AND THE CALCANEAL VENOUS RETE, RETE VENOSUM CALCANEUM; THE PLANTAR DIGITAL VEINS, VENÆ DIGITALES PLANTARES, AND THE \*INTERCAPITULAR VEINS (OF THE FOOT), \*VENÆ INTERCAPITULARES (PEDIS); THE PLANTAR METATARSAL VEINS, VENÆ METATARSEÆ PLANTARES, AND THE PLANTAR VENOUS ARCH, ARCUS VENOSUS PLANTARIS; THE CONTINUITY OF THE INTERNAL AND EXTERNAL PLANTAR VEINS, VENÆ PLANTARES MEDIALIS ET LATERALIS, WITH THE POSTERIOR TIBIAL VEINS, VENÆ TIBIALES POSTERIORES; THE PLANTAR RADICLES OF THE INTERNAL OR LONG AND THE EXTERNAL OR SHORT SAPHENOUS VEINS, VENÆ SAPHENÆ, MAGNA ET PARVA.

The muscles of the sole of the foot were entirely removed, the superficial and deep bloodvessels being left intact.

### Veins of the Sole of the Foot.





SYSTEMA LYMPHATICUM  
THE LYMPHATIC SYSTEM

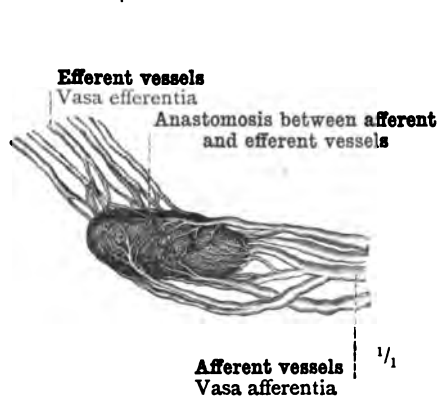


FIG. 1108.—LYMPHATIC GLAND (HUMAN) FROM THE INTERNAL ILIAC GROUP, OF WHICH THE AFFERENT AND EFFERENT VESSELS HAVE BEEN INJECTED.

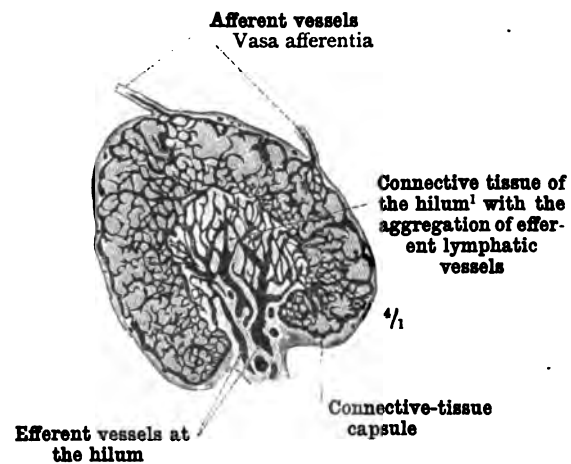


FIG. 1109.—TRANSVERSE SECTION THROUGH ONE OF THE INTERNAL ILIAC LYMPHATIC GLANDS OF MAN IN WHICH THE LYMPHATIC VESSELS HAVE BEEN INJECTED WITH PRUSSIAN BLUE AND THE GLAND HAS SUBSEQUENTLY BEEN HARDENED IN ALCOHOL.

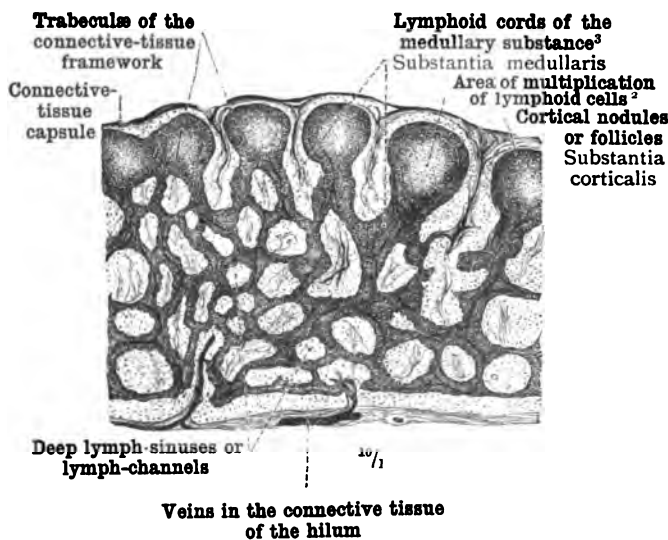


FIG. 1110.—SECTION OF A MESENTERIC LYMPHATIC GLAND, HARDENED IN ALCOHOL.

The bloodvessels, which were injected with Prussian blue, are tinted deep black.

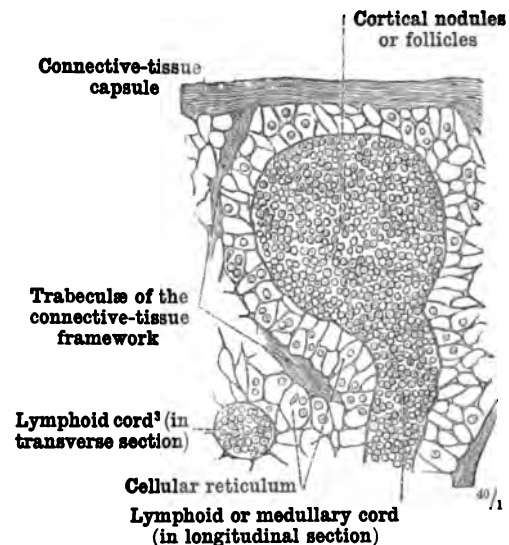


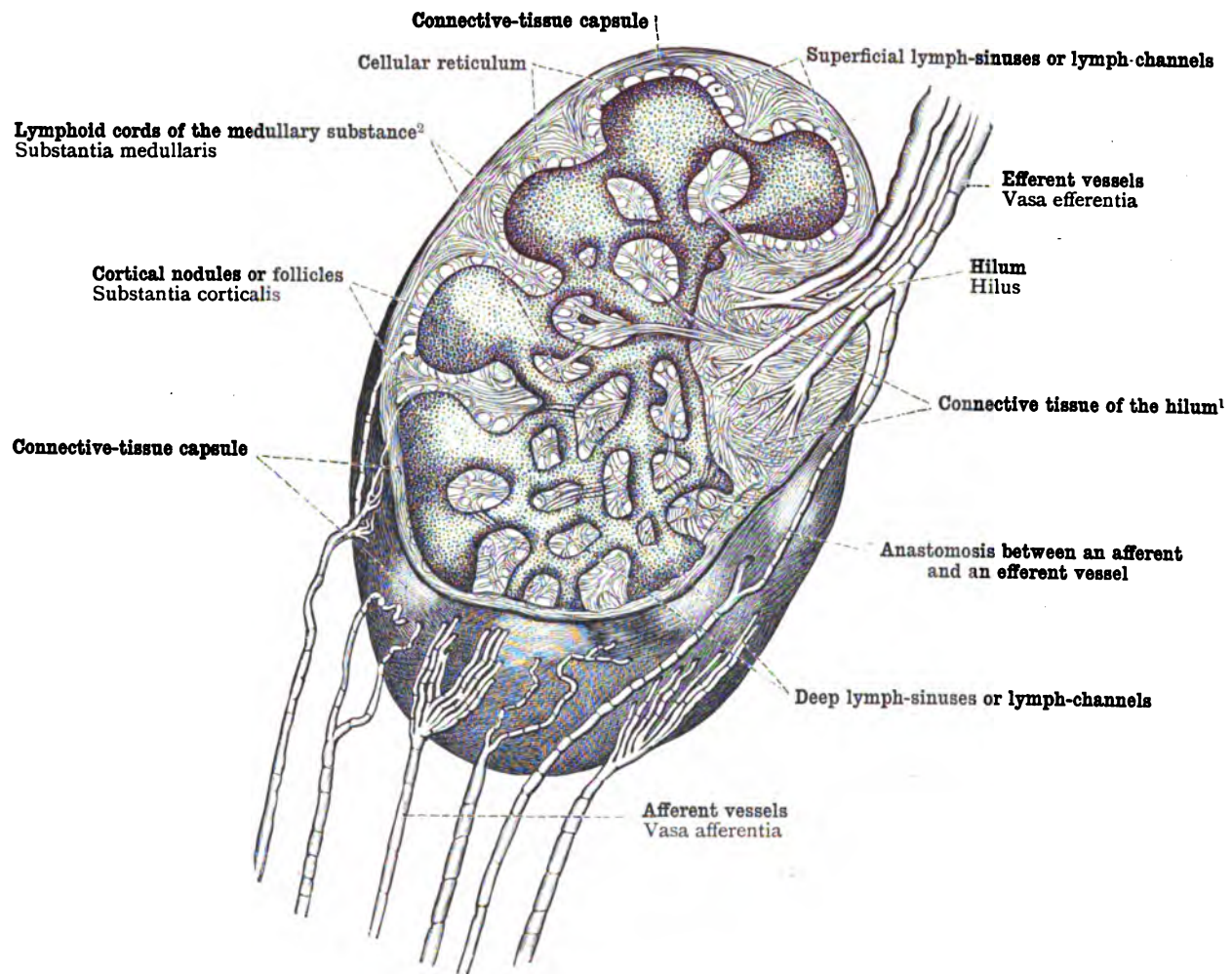
FIG. 1111.—CORTICAL NODULES OR FOLLICLES AND LYMPHOID OR MEDULLARY CORDS OF A MESENTERIC LYMPHATIC GLAND, SEEN IN TRANSVERSE SECTION, AND MAGNIFIED FORTY DIAMETERS.

<sup>1</sup> *Connective Tissue of the Hilum*.—"In the region of the hilum, where the efferent vessels leave the gland, the trabeculae combine with the connective-tissue capsule to form a dense mass of connective tissue, the *Hilusstroma*, in the interior of which the radicles of the efferent lymphatic vessels are aggregated" (Von Langer and Toldt, *op. cit.*, pp. 561, 562). It is this term *Hilusstroma* which I have translated by the phrase "connective tissue of the hilum."—Tr.

<sup>2</sup> *Keimcentrum* in the German original.

<sup>3</sup> Or *medullary cords* (Foster).



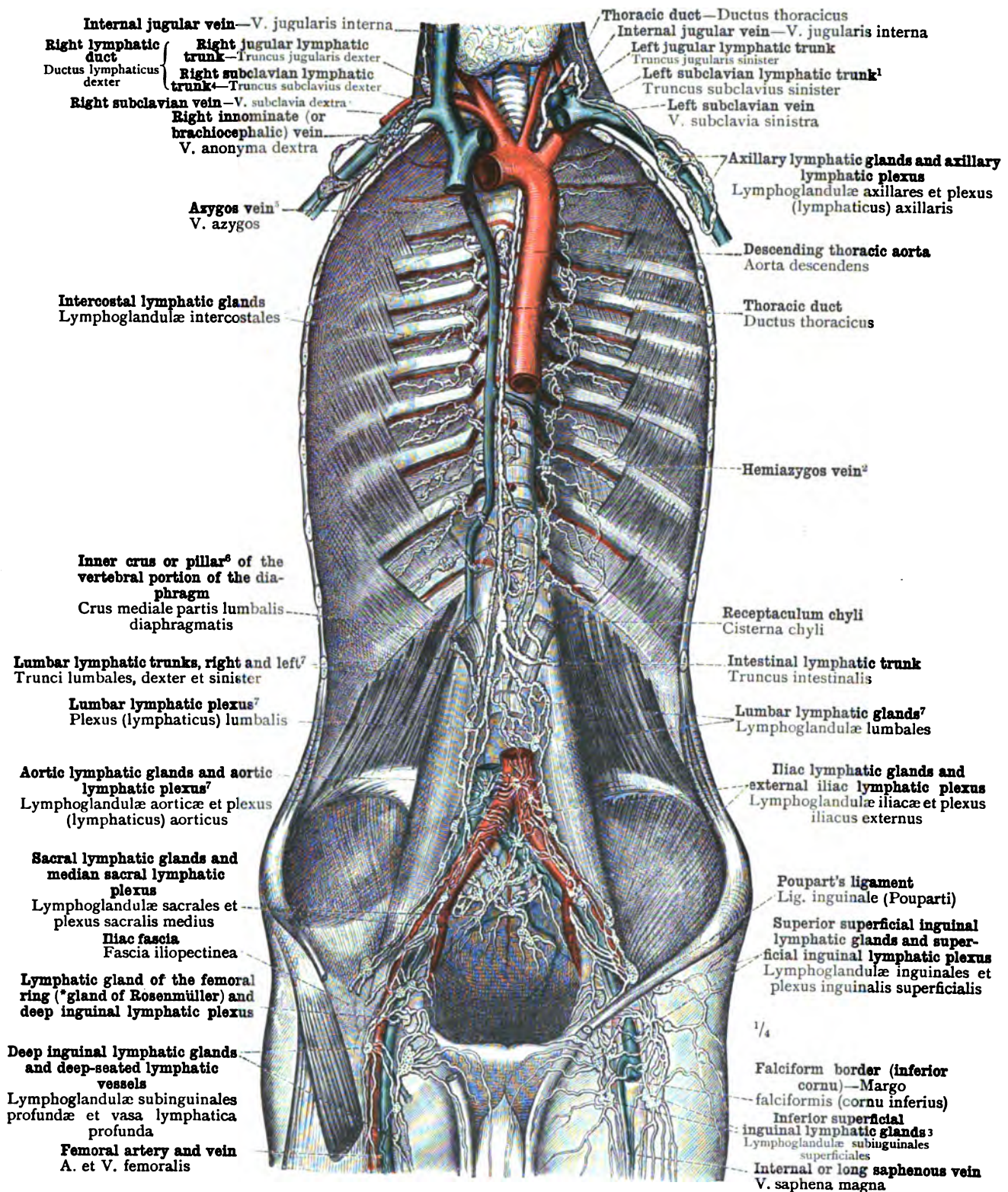


<sup>1</sup> See note <sup>1</sup> to p. 716.

<sup>2</sup> Or medullary cords (Foster).

FIG. III12.—DIAGRAMMATIC REPRESENTATION OF THE INTERNAL STRUCTURE OF A LYMPHATIC GLAND WITH AFFERENT AND EFFERENT LYMPHATIC VESSELS, VASA AFFERENTIA ET VASA EFFERENTIA.

Lymphoglandulæ—Lymphatic glands.



<sup>1</sup> According to Quain, the left axillary lymphatic trunk.

<sup>3</sup> Often called the femoral lymphatic glands.

<sup>5</sup> Known also as the right or large azygos vein.

<sup>7</sup> See Appendix, note 3<sup>14</sup>.

<sup>2</sup> Known also as the left lower or small azygos vein.

<sup>4</sup> According to Quain, the right axillary lymphatic trunk.

<sup>6</sup> See note <sup>2</sup> to p. 286, in Part III.

FIG. 1113.—THE THORACIC DUCT, DUCTUS THORACICUS, AND THE LYMPHATIC TRUNKS OPENING INTO THAT VESSEL; THE LYMPHATIC VESSELS AND LYMPHATIC GLANDS OF THE POSTERIOR WALL OF THE ABDOMEN; THE SUPERFICIAL AND DEEP LYMPHATIC VESSELS AND LYMPHATIC GLANDS OF THE GROIN.

Ductus thoracicus—The thoracic duct.



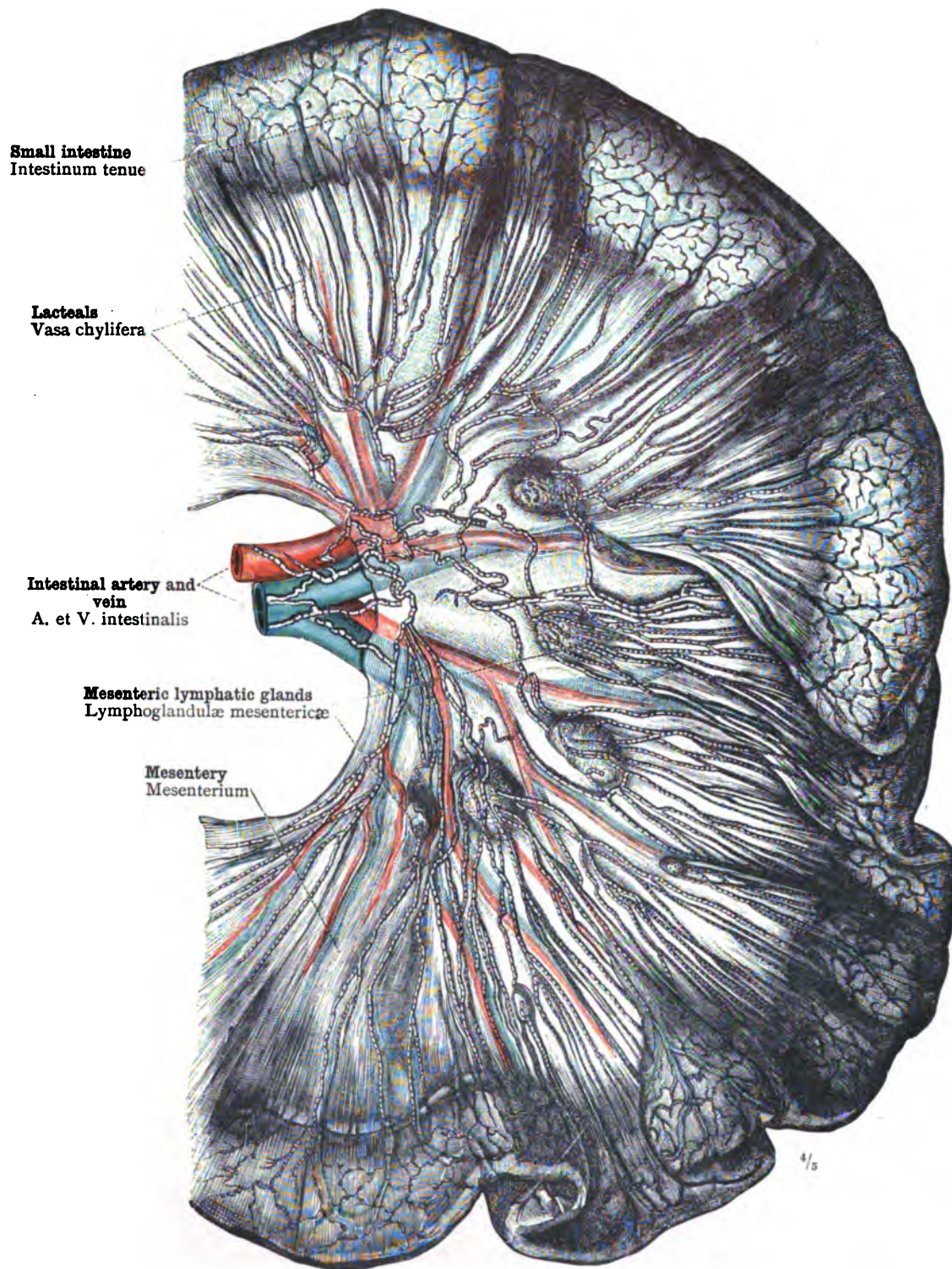
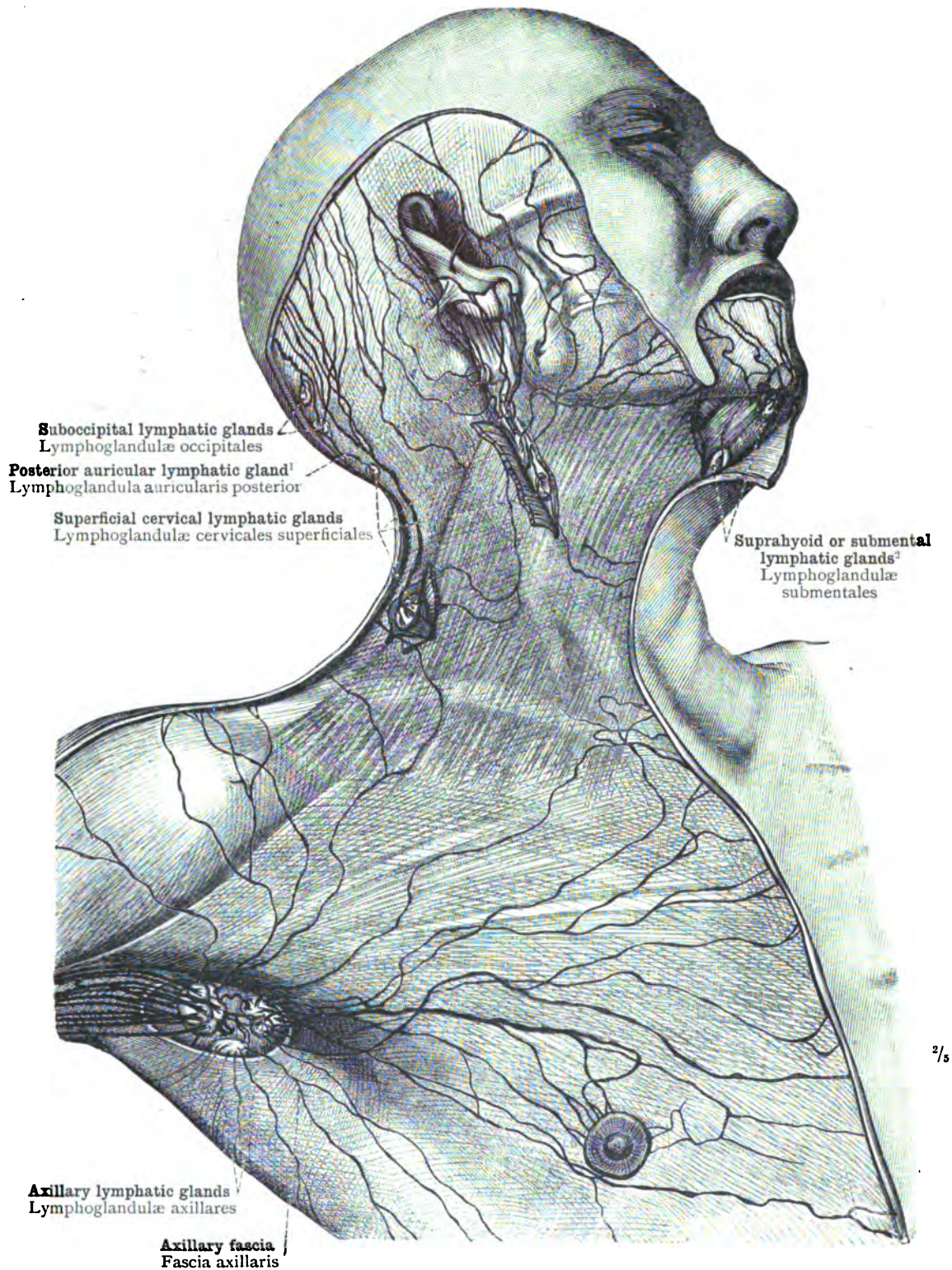


FIG. 1114.—THE LACTEALS AND THE MESENTERIC LYMPHATIC GLANDS, DEMONSTRATED IN A LOOP OF SMALL INTESTINE BY INJECTION WITH METALLIC MERCURY.

Vasa chyliifera—Lacteals.—Lymphoglandulæ mesentericæ—Mesenteric lymphatic glands.





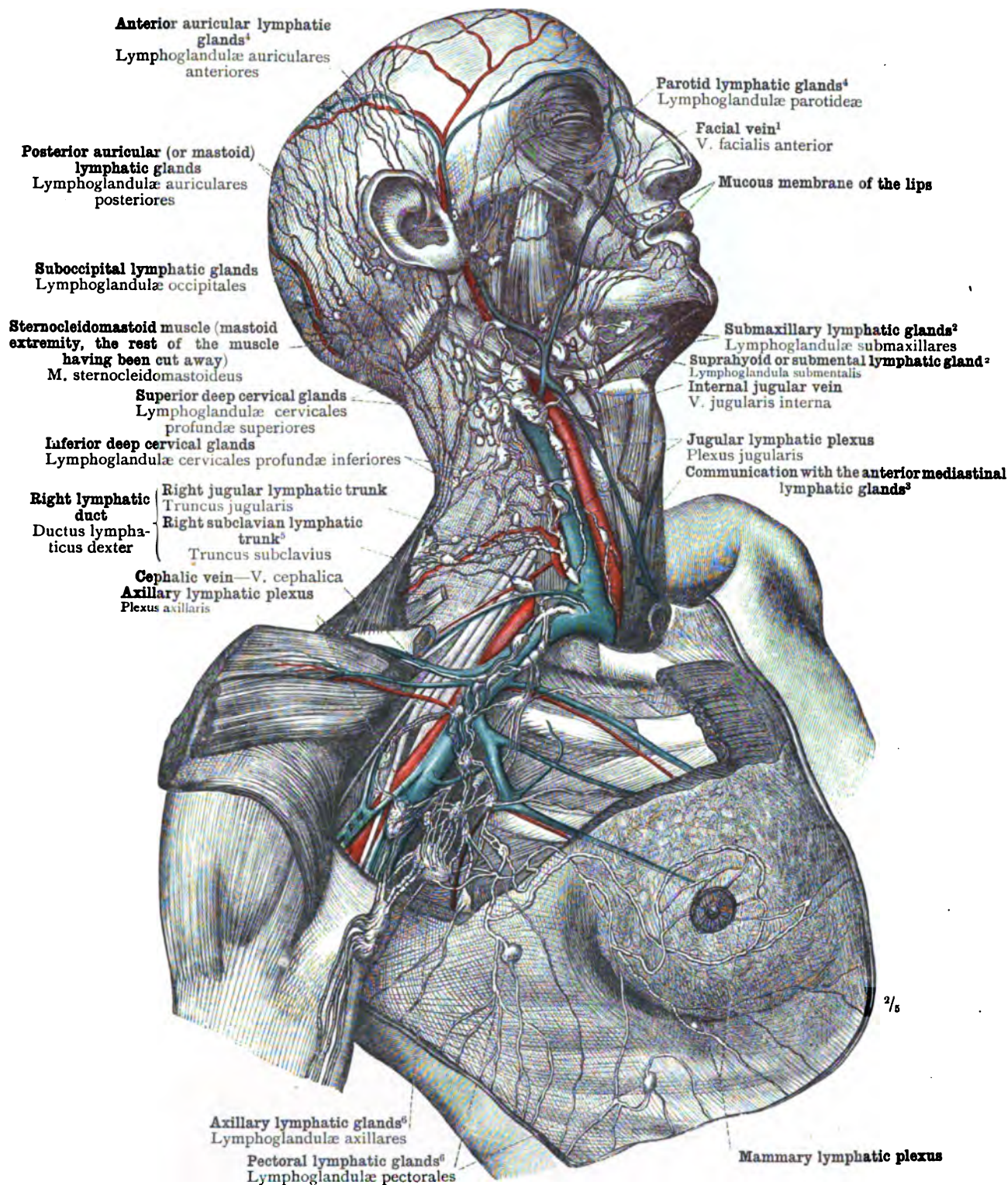
<sup>1</sup> This is one of the *mastoid lymphatic glands* in Quain's nomenclature.

<sup>2</sup> See Appendix, note 315.

FIG. 1115.—THE SUPERFICIAL LYMPHATIC VESSELS, VASA LYMPHATICA SUPERFICIALIA, OF THE HEAD AND NECK, AND OF THE UPPER THORACIC AND THE HUMERAL REGIONS, WITH THE SUPERFICIAL LYMPHATIC GLANDS WITH WHICH THEY ARE CONNECTED.

Lymphatic Vessels of the Head, the Neck, and the Anterior Wall of the Thorax.





<sup>1</sup> Sometimes distinguished as the *anterior facial vein*. See Appendix, note <sup>283</sup>.

<sup>3</sup> See Appendix, note <sup>316</sup>.

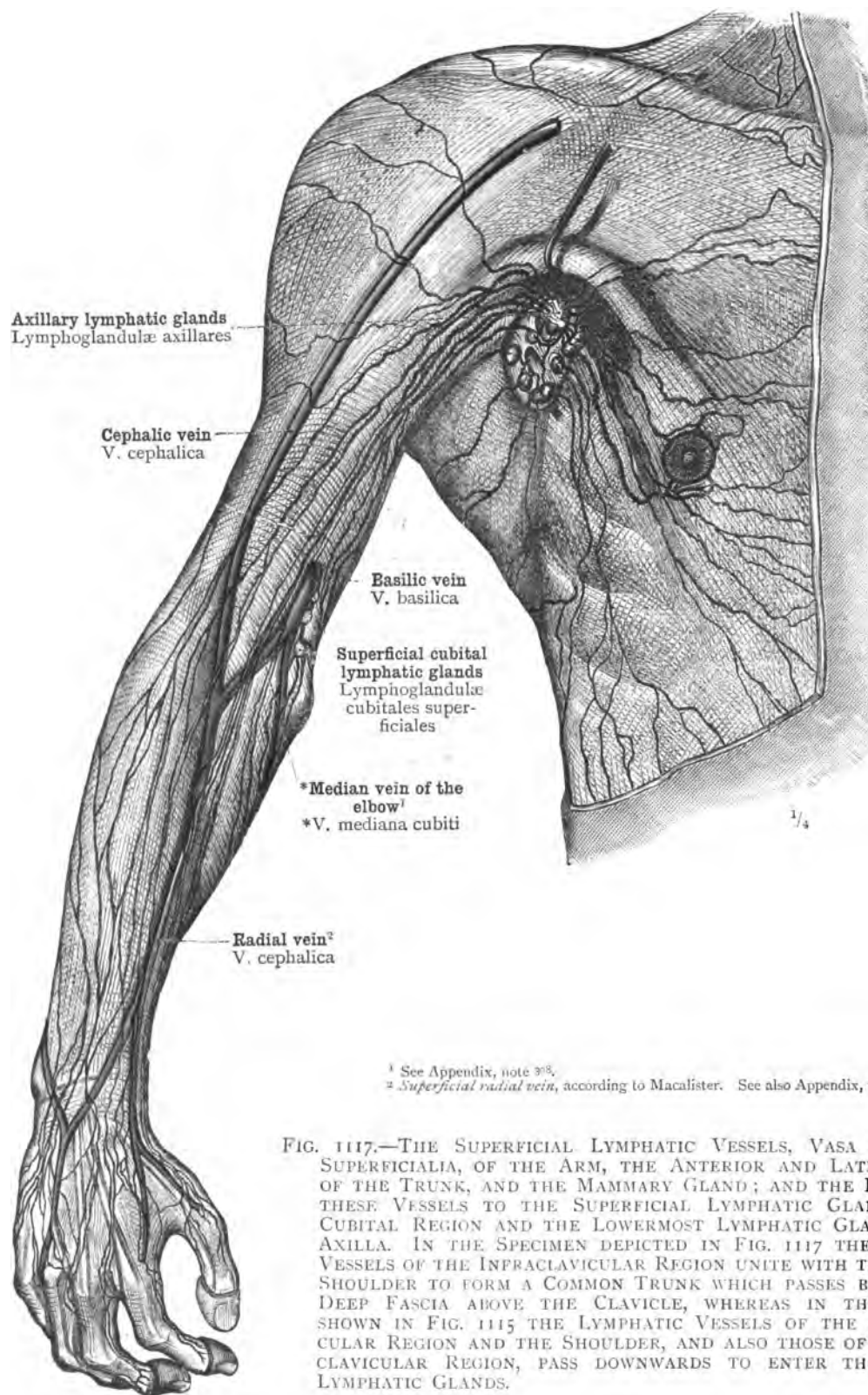
<sup>5</sup> According to Quain, the *right axillary lymphatic trunk*.

<sup>6</sup> The *pectoral*, the *subscapular*, and the *infraclavicular lymphatic glands* are described by Quain as subgroups of the *axillary lymphatic glands*.

<sup>2</sup> See Appendix, note <sup>315</sup>.

<sup>4</sup> See Appendix, note <sup>317</sup>.

FIG. 1116.—THE SUPERFICIAL LYMPHATIC VESSELS, VASA LYMPHATICA SUPERFICIALIA, OF THE HEAD, AND THE DEEP LYMPHATIC VESSELS, VASA LYMPHATICA PROFUNDA, OF THE NECK AND THE AXILLA, WITH THE ASSOCIATED LYMPHATIC GLANDS; THE LYMPHATIC VESSELS OF THE FEMALE MAMMARY GLAND.



Lymphatic Vessels of the Upper Limb and the Anterior and Lateral Walls of the Trunk.



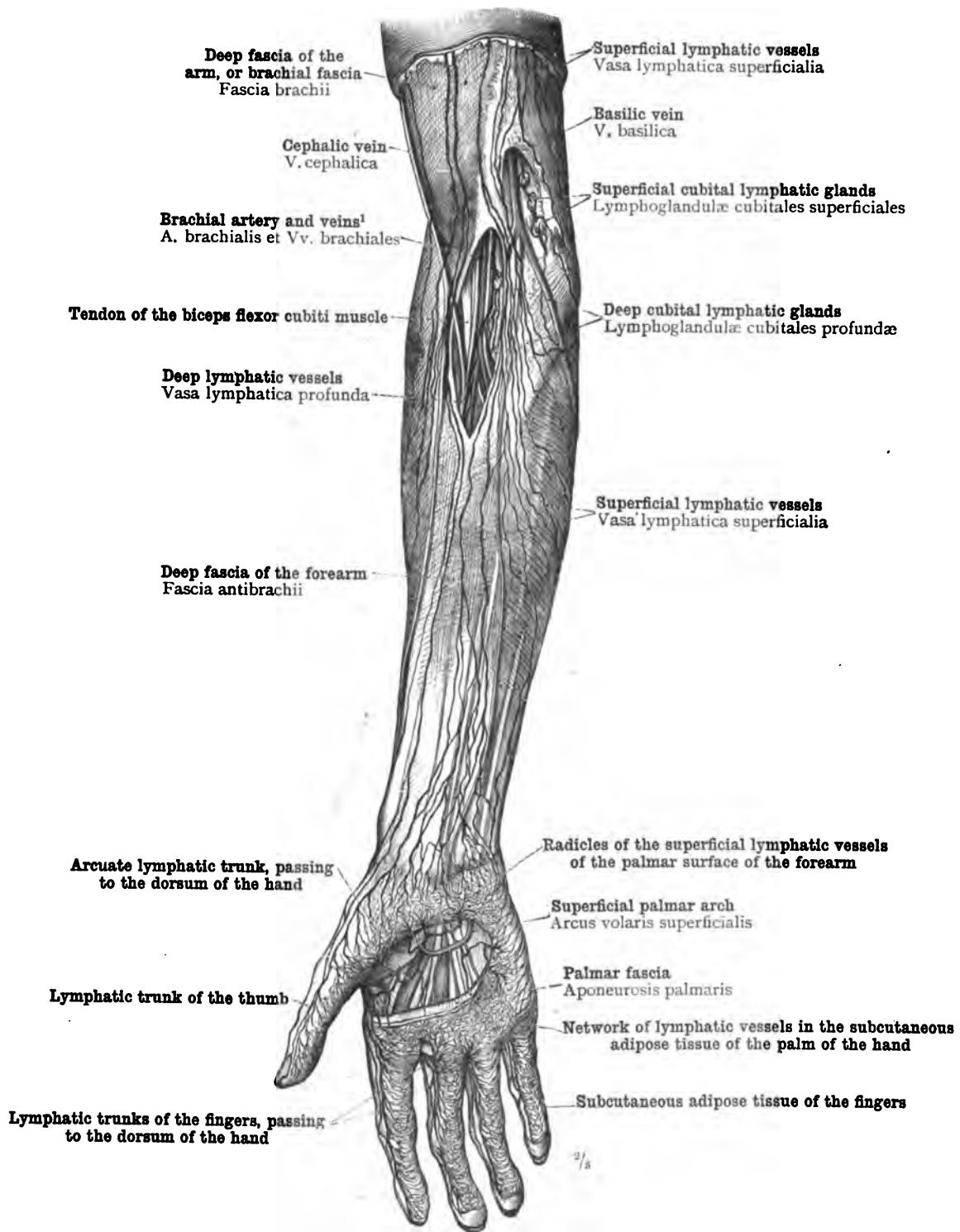
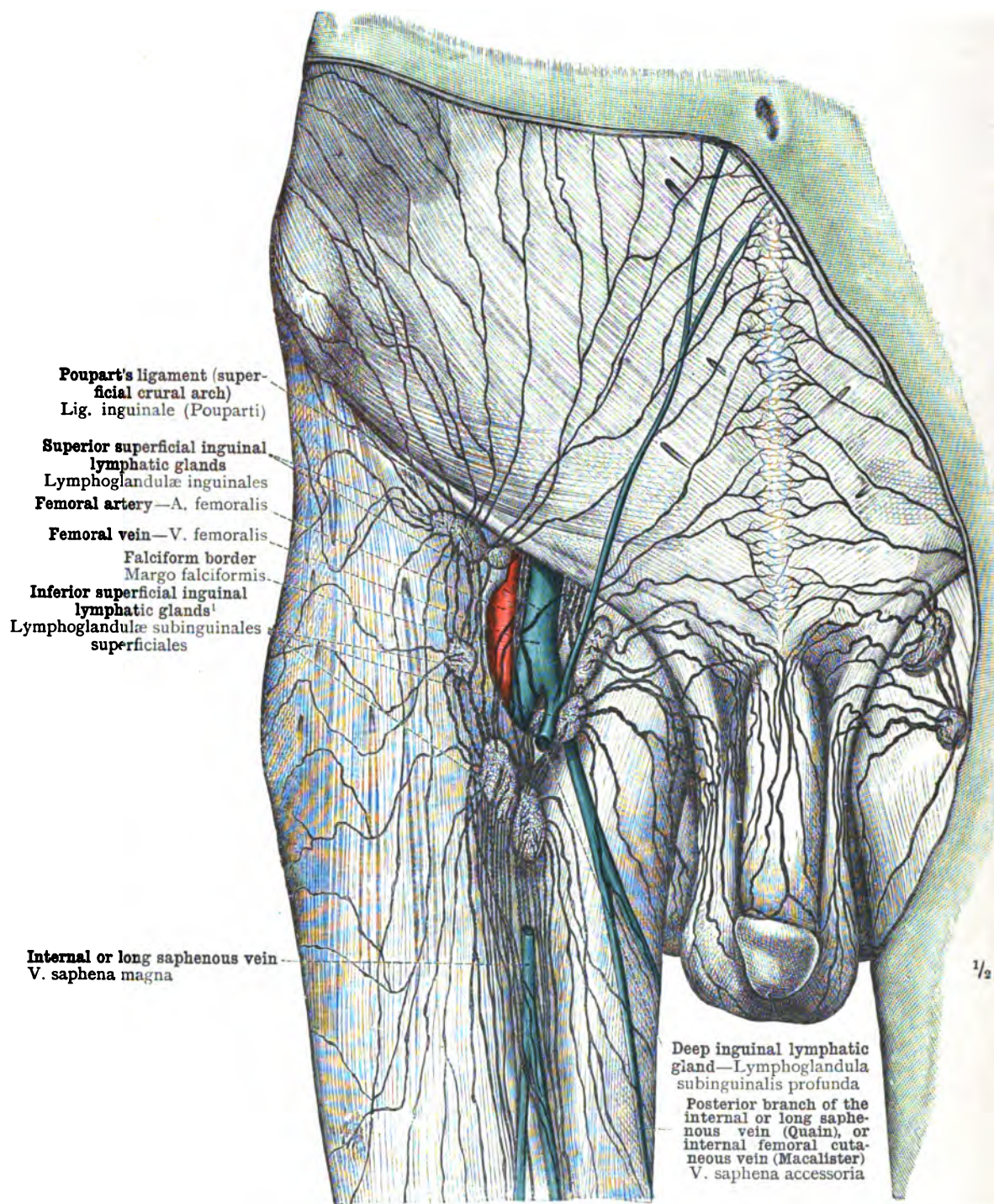


FIG. IIII8.—LYMPHATIC VESSELS OF THE PALMAR SURFACE OF THE FOREARM AND HAND. IN THE FLEXURE OF THE ELBOW (ANTECUBITAL FOSSA), THE DEEP LYMPHATIC VESSELS AND GLANDS HAVE BEEN EXPOSED BY DIVISION OF THE DEEP FASCIA.



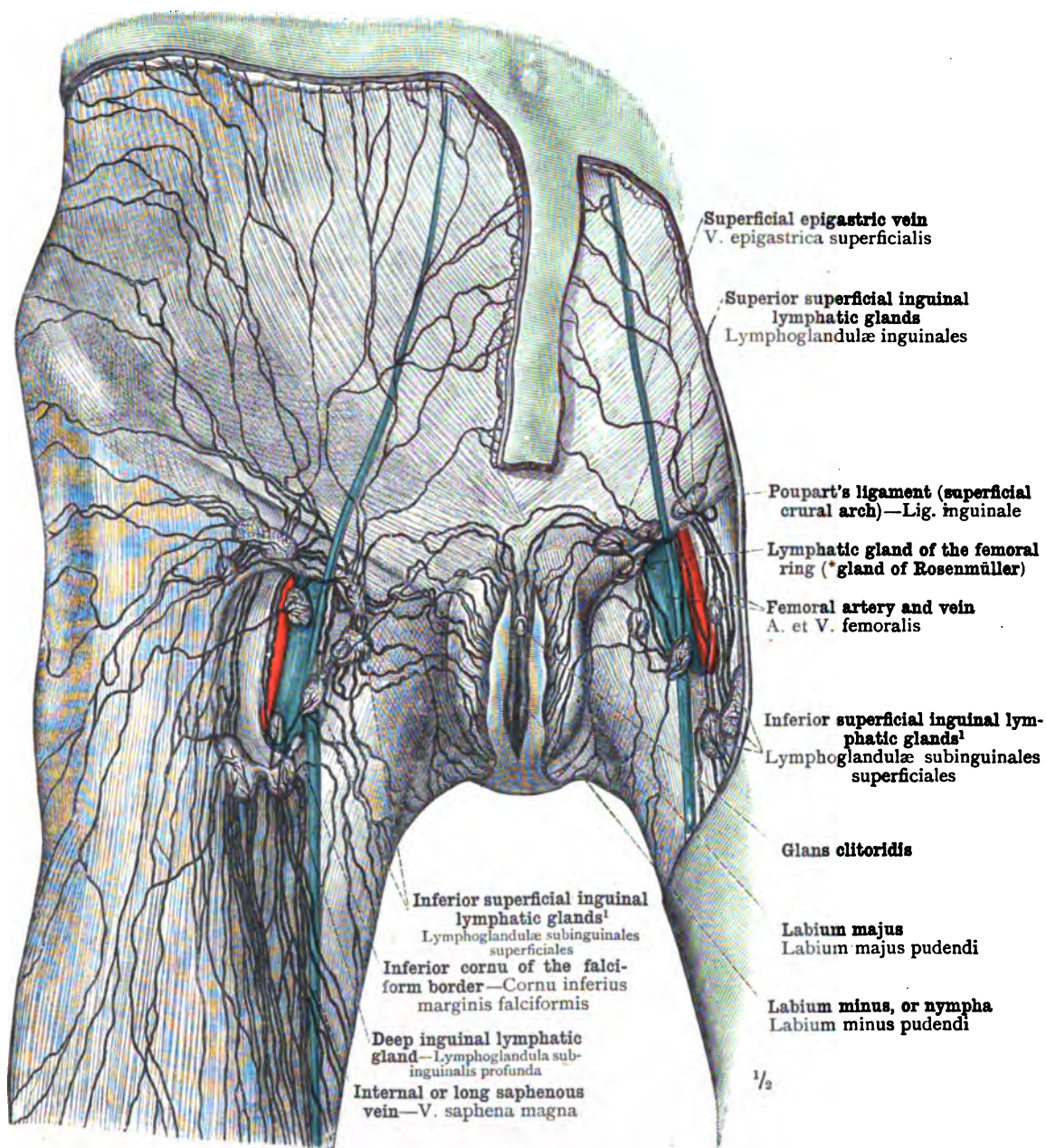
\* Often called the *femoral lymphatic glands*.

FIG. III9.—THE SUPERFICIAL LYMPHATIC VESSELS, VASA LYMPHATICA SUPERFICIALIA, OF THE INGUINAL REGION, THE MALE EXTERNAL GENITAL ORGANS, AND THE ADJOINING PORTIONS OF THE THIGH AND ABDOMEN, WITH THE ASSOCIATED LYMPHATIC GLANDS; THE SUPERFICIAL INGUINAL LYMPHATIC PLEXUS.

The superior cornu of the falciform border and part of the internal or long saphenous vein were removed.

**Superficial Lymphatic Vessels and Glands of the Inguinal Region and the Male External Genital Organs.**

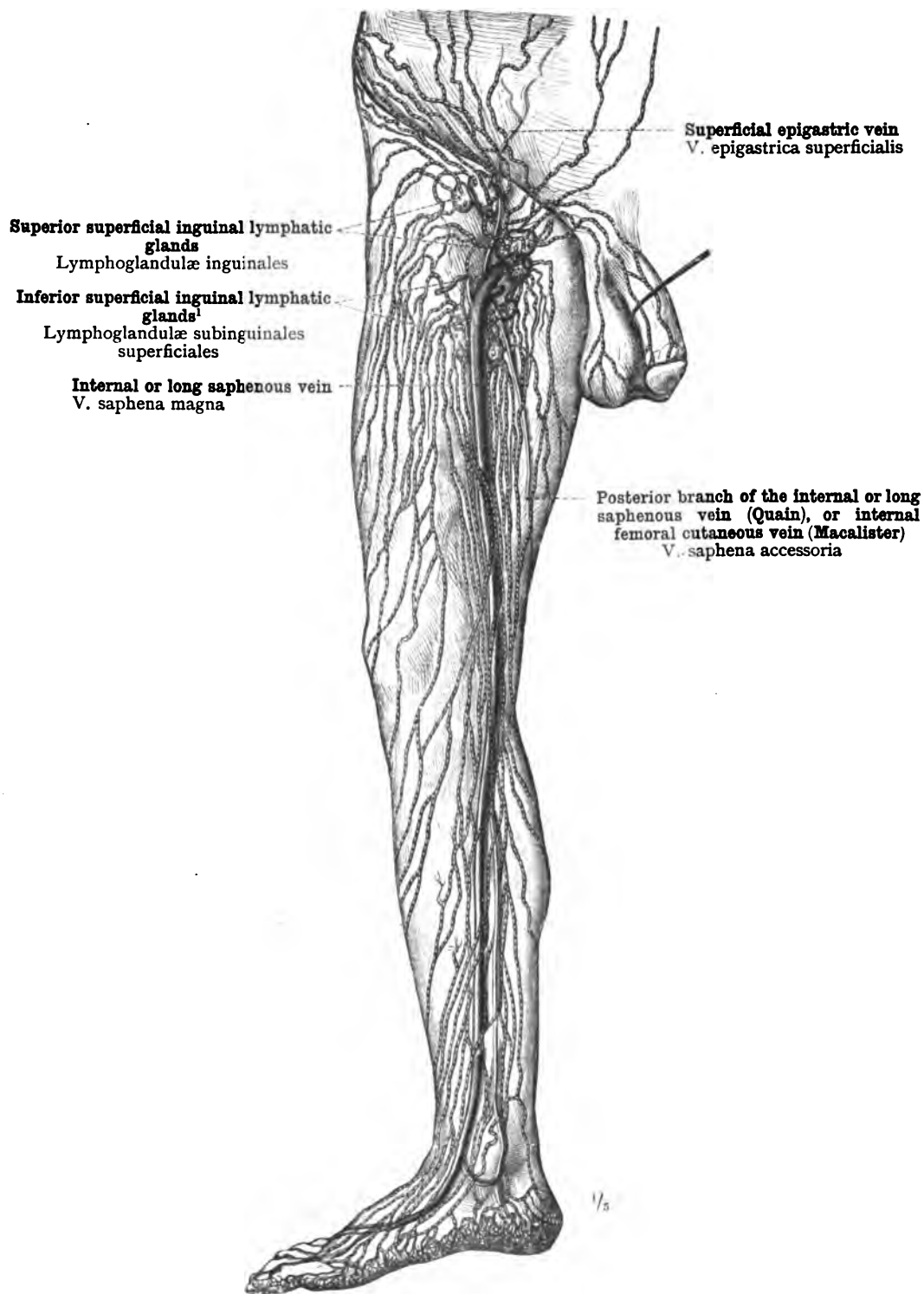




<sup>1</sup> Often called the *femoral lymphatic glands*.

FIG. 1120.—THE SUPERFICIAL LYMPHATIC VESSELS, VASA LYMPHATICA SUPERFICIALIA, OF THE INGUINAL REGION, THE FEMALE EXTERNAL GENITAL ORGANS, AND THE ADJOINING PORTIONS OF THE THIGH AND ABDOMEN, WITH THE ASSOCIATED LYMPHATIC GLANDS.

Superficial Lymphatic Vessels and Glands of the Inguinal Region and the Female External Genital Organs.



<sup>1</sup> Often called the *femoral lymphatic glands*.

FIG. 1121.—THE SUPERFICIAL LYMPHATIC VESSELS, VASA LYMPHATICA SUPERFICIALIA, OF THE RIGHT LOWER LIMB, THE MALE EXTERNAL GENITAL ORGANS, AND THE ANTERIOR WALL OF THE ABDOMEN, WITH THE SUPERIOR SUPERFICIAL INGUINAL LYMPHATIC GLANDS, LYMPHOGLANDULÆ INGUINALES, AND THE INFERIOR SUPERFICIAL INGUINAL LYMPHATIC GLANDS (OFTEN CALLED THE FEMORAL LYMPHATIC GLANDS), LYMPHOGLANDULÆ SUBINGUINALES SUPERFICIALES. SEEN FROM BEFORE AND THE INNER SIDE.

The lymphatic vessels were injected with metallic mercury.

### Lymphatic Vessels of the Lower Limb.



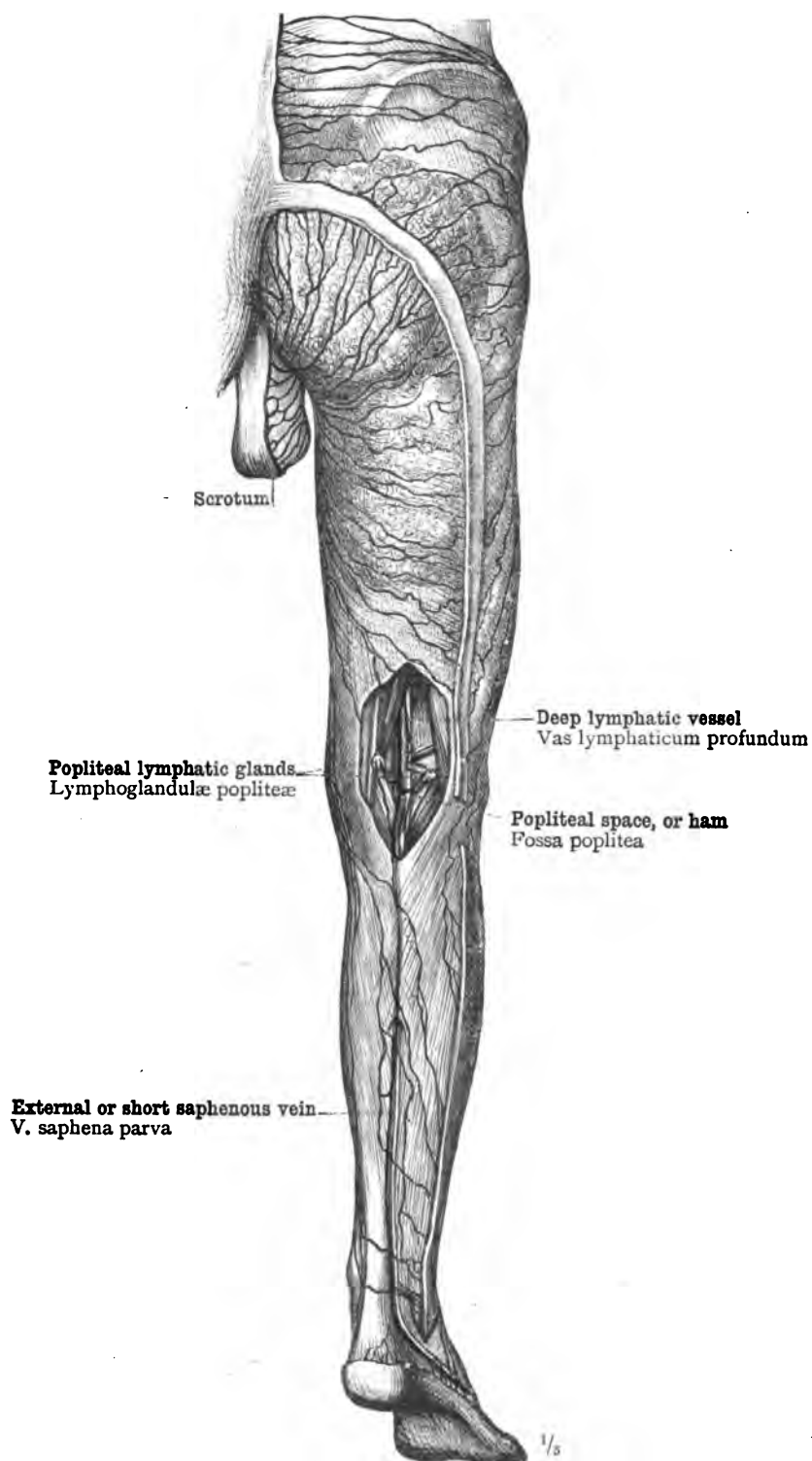


FIG. 1122.—THE SUPERFICIAL LYMPHATIC VESSELS, VASA LYMPHATICA SUPERFICIALIA, OF THE BACK OF THE RIGHT LOWER LIMB, THE HIP, AND THE SCROTUM. IN THE POPLITEAL SPACE, OR HAM, THE DEEP LYMPHATIC VESSELS AND GLANDS HAVE BEEN EXPOSED BY DIVISION OF THE DEEP FASCIA.

### Lymphatic Vessels of the Lower Limb.

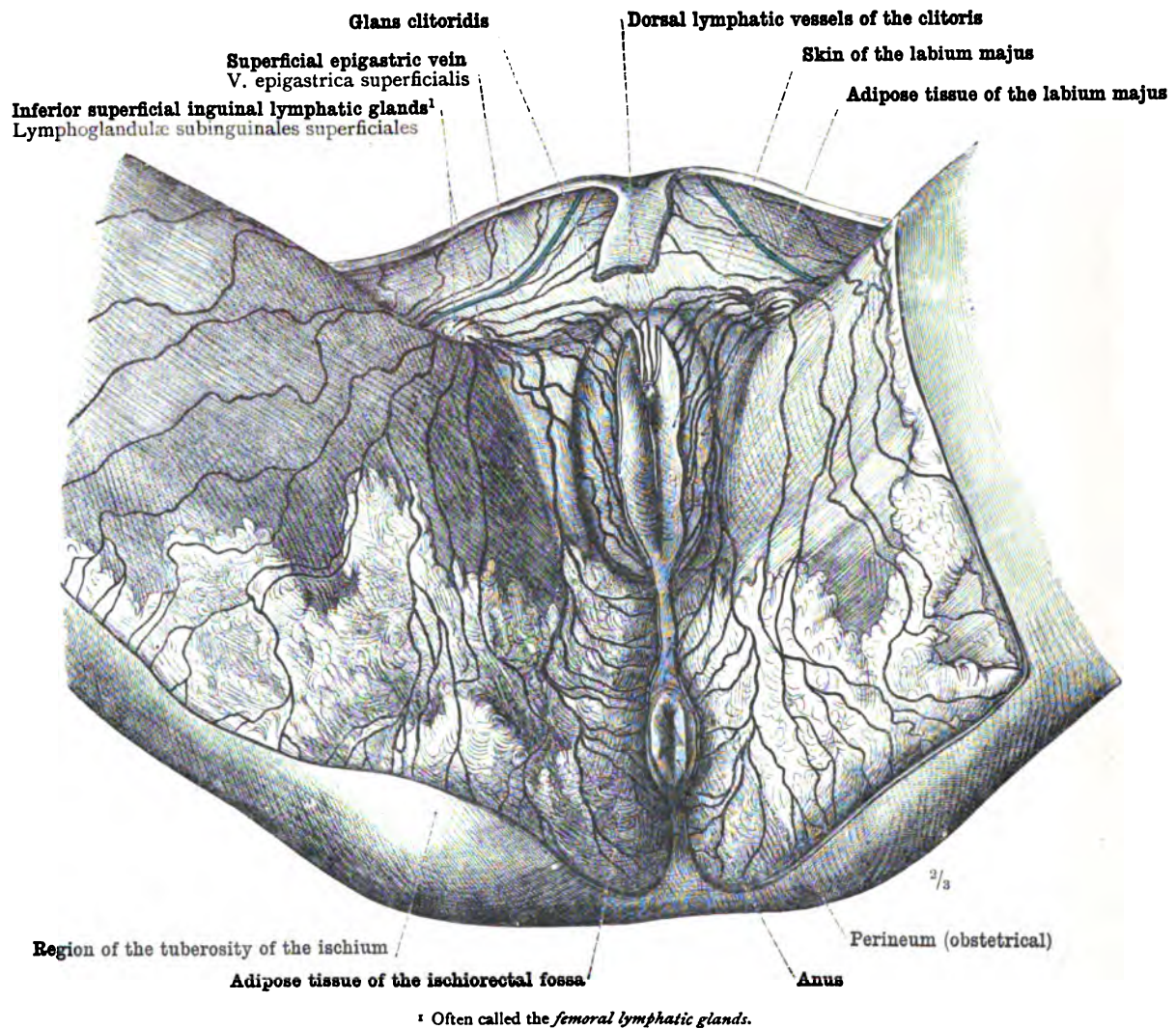


FIG. 1123.—THE SUPERFICIAL LYMPHATIC VESSELS, VASA LYMPHATICA SUPERFICIALIA, OF THE PERINEAL REGION AND THE FEMALE EXTERNAL GENITAL ORGANS.

In order to expose the dorsal lymphatic vessels of the clitoris (both in this specimen and in that depicted in Fig. 1120), the anterior commissure of the vulva was divided and the prepuce of the clitoris removed, so as to lay bare the body of that organ.

Superficial Lymphatic Vessels of the Perineal Region.



## APPENDIX TO PART V.

### NOTES BY TRANSLATOR

<sup>111</sup> (Fig. 944, p. 562.) The *ligamentum arteriosum* is a fibrous cord passing from the upper aspect of the right pulmonary artery, a little to the left of the bifurcation of the main trunk, upwards and backwards to the under side of the arch of the aorta. It is the remains of the obliterated foetal *ductus arteriosus*. These structures are sometimes called the *ligament* and *duct of Botallus* (*Botallus*).

<sup>112</sup> *Sinuses of Valsalva* (*Ibid.*).—The pulmonary artery, like the aorta, exhibits three bulgings at its root, opposite the three *semilunar* or *sigmoid* flaps of the valve guarding its ventricular orifice, known as the *sinuses of Valsalva*. The capacity of these sinuses is greater in the case of the aorta than in the case of the pulmonary artery, and it is the aortic sinuses that are as a rule denoted when the sinuses of Valsalva are spoken of without further qualification. Macalister, indeed, uses the name *sinuses of Valsalva* only in reference to the aorta, and terms the similar structures in the pulmonary artery the *pulmonary sinuses*. Young, on the other hand, in his "Synopsis of Human Anatomy" (U.S.), denotes by the term *sinuses of Valsalva* the *pulmonary sinuses* only, and states that "the *sinus aortici* correspond to the sinuses of Valsalva on the right side;" but this is opposed to the customary usage.

<sup>113</sup> *Auricle and Atrium* (*Ibid.*).—The name *auricle* (*auricula*, little ear) was originally applied to what in England is now called the *auricular appendix*, which has a triangular pointed shape resembling that of the external ear of many mammals. The antechambers of the heart as a whole were called the *atria*. In Germany these terms are still used in their primitive signification; but in England the term *auricle* has, by metonymy, come to denote the antechamber as a whole, each *auricle* consisting of two parts: the *atrium* and the *auricular appendix*.

<sup>114</sup> *Arteria Coronaria (Cordis) Dextra* (*Ibid.*).—The word *cordis* is added to distinguish the coronary arteries of the heart from the coronary arteries of the lips and the stomach respectively. In the author's nomenclature, however, the distinction is superfluous, since the *coronary arteries of the lips* are by him named *arteria labiales*; and the *coronary artery of the stomach*, *arteria gastrica sinistra*. Usually, moreover, the context is sufficient guide, and the qualification unnecessary. The branches of the *right coronary artery* seen in this figure are the smaller *infundibular* branch, which ramifies over the *conus arteriosus* of the right ventricle; and the larger *marginal* branch, which runs down the right border to the apex of the heart. (Macalister calls these the *pre-ventricular* and *right marginal* arteries, respectively.) The *smallest cardiac veins* correspond to the former branch, the *anterior cardiac veins* to the latter. The termination of the right coronary artery in *transverse* and *descending* branches is seen in the next figure.

<sup>115</sup> *Sinus Venosus and Sulcus Terminalis* (Fig. 945, p. 563).—Quain ("Anatomy," 10th ed., vol. ii., part ii., pp. 356 and 357) writes: "The main part of the auricle, that into which the great veins directly pour their blood, is commonly named *sinus*

*venosus*, or *atrium*, to distinguish it from the auricular appendix. At the outer and posterior part of the atrium is a slight groove, the *sulcus terminalis* of His, which runs from the front of the termination of the superior to the right of the inferior vena cava, and marks off the portion of the atrium formed by the dilated end of the venous trunks (*saccus reuniens* of the embryo) from that belonging to the primitive auricle." While Quain thus identifies the *sinus venosus* with the main cavity of the right auricle, Toldt denotes by the *sinus venarum (cavarum)* only that portion of the cavity lying to the left of the *sulcus terminalis*; the meaning of the English equivalent, *sinus venosus*, should be similarly restricted, as it then denotes that portion of the cavity of the auricle corresponding to the *saccus reuniens* of the embryo.

<sup>116</sup> (*Ibid.*) The *right coronary artery* is here seen dividing into its terminal *transverse* and *descending* branches. The latter is called by Macalister the *posterior interventricular* artery. For the earlier branches of the right coronary artery, see above, note <sup>114</sup>.

<sup>117</sup> (*Ibid.*) The *oblique vein of Marshall* runs from the *vestigial fold* (*plica vena cava sinistra*—see Fig. 974, p. 584) over the back of the left auricle to join the coronary sinus. It has no valve over its orifice; and the vein, together with the coronary sinus, is regarded as the *vestige* of the left superior vena cava of the foetus (see note <sup>123</sup> below).

<sup>118</sup> \**Corona Cordis* (*Ibid.*).—The author describes the heart as divided by the auriculoventricular groove into two parts: the *Herzkrone* (*corona cordis*), consisting of the two auricles with the intrapericardial portions of the great vessels; and the *Herzkegel* ("cone of the heart"—no Latin equivalent is given), consisting of the two ventricles. No English equivalent for these terms is used by Quain or Macalister, the *base of the heart* being not a portion, but one of the surfaces of the organ.

<sup>119</sup> \**Umbilical Ring* (Fig. 970, p. 580).—"The small aperture in the anterior abdominal wall by means of which the umbilical vessels pass into the umbilical cord, *annulus umbilicalis*, closes during the days immediately following birth" (Von Langer and Toldt, *op. cit.*, p. 406). In England the term *umbilical ring* is seldom employed, the term *umbilicus* denoting that structure as well as the *navel proper*, the permanent remnant of the umbilical cicatrization. The author's terminology, however, is more accurate.

<sup>120</sup> *Hypogastric Artery* (*Ibid.*).—In England this term denotes the intra-abdominal portion of the umbilical artery of the foetus, which undergoes obliteration after the cessation of the placental circulation, and is represented in the adult by a fibrous cord. The author's *arteria hypogastrica* and *vena hypogastrica*, on the other hand, denote the *internal iliac artery* and *vein* of English anatomists.

<sup>121</sup> *Bulbus Vena Jugularis* (Fig. 972, p. 582).—The author recognises *two bulbs* of the internal jugular vein, a *superior* and an *inferior*. English anatomists, when speaking of the *bulb* or *sinus* of the *internal jugular vein*, denote the *bulbus superior* of Toldt, only. This dilatation occupies the large posterior compartment of the

jugular foramen (see Fig. 1080, p. 685). According to Langer, however, the bulb does not belong to the internal jugular vein, but is to be regarded as the convexity of a sharp bend formed by the lateral sinus before it terminates in the vein. The *bulbus venæ jugularis inferior* of Toldt is the dilated inferior extremity of the internal jugular vein, just above its junction with the subclavian vein.

<sup>122</sup> *Plica Venæ Cavæ Sinistræ* (Fig. 974, p. 584).—This is a fold of pericardium, called by Marshall the *vestigial fold*, lying between the left pulmonary artery and the subjacent pulmonary vein. It encloses a vestige of the left superior vena cava (*duct of Cuvier*) of the foetus in the form of a strand of fibrous tissue. From its inferior extremity the *oblique vein of Marshall* runs across the back of the left auricle to open into the coronary sinus. See note <sup>117</sup> above.

<sup>123</sup> *\*Jugular Venous Arch* (Ibid.).—This term is not used by Quain or Macalister. It is applied by the author to the communicating branch in the suprasternal space (*Burns's space*) between the two anterior jugular veins, and to those portions of the anterior jugular veins below the communicating branch which run outwards on each side behind the origin of the sternocleidomastoid muscle to open into the lower end of the external jugular vein. A transverse venous arch is thus formed at the root of the neck between the external jugular veins.

<sup>124</sup> (Fig. 975, p. 585).—In the normal development of the great veins, it is this communicating branch, often called the *transverse jugular vein*, which forms the greater part of the definitive left innominate vein.

<sup>125</sup> *Angulus Venosus* (Ibid.).—The name *\*venous angle, right, and left*, is given by the author to the junction on the respective sides of the neck of the internal jugular and subclavian veins, normally to form the innominate veins; in the specimen shown in Fig. 975, however, to form the superior vena cava (right and left).

<sup>126</sup> *Lumbar Arteries* (Fig. 981, p. 592).—These are usually five in number on each side, of which the upper four regularly arise from the aorta, and sometimes the fifth also; but quite often this artery, *arteria lumbalis ima*—the *lowest lumbar artery*—is, as in the present specimen, a branch of the *middle sacral artery*, or *sacral aorta*.

<sup>127</sup> (Ibid.) The *middle sacral artery* represents the caudal prolongation of the aorta met with in lower mammals, and its lateral branches are homologous with the intercostal and lumbar arteries; hence the name *sacral aorta*, used by Macalister. According to the terminology of this author (*op. cit.*, p. 428), "At the sacrococcygeal joint the artery becomes *middle coccygeal* or *caudal*, and is continued downwards to the tip of the coccyx, where its terminal branch passes outwards to end in the coccygeal glomerulus." In Toldt's nomenclature, however, as in that of Quain, the *middle sacral artery* (*arteria sacralis media*) retains its name unchanged up to its termination in the *coccygeal gland* or *glomerulus* (*glomus coccygeum*). This structure is shown in Fig. 926, p. 534, Part IV.

<sup>128</sup> *Sinus Maximus Aortæ* (Ibid.).—The space between the dotted lines pointing to the *ascending aorta* and the *arch of the aorta* in Fig. 981 is occupied by the *great sinus of the aorta*, which is not mentioned by the author. The aorta is first of a trefoil shape, owing to the presence of the *sinuses of Valsalva*, then becomes circular, then elliptical, the upper part of the ascending aorta and the commencement of the arch being dilated to form the *great sinus*, the long axis of whose ellipse is directed backwards and to the left. The dilatation varies in size in different bodies, is usually better marked in elderly persons, and

occasionally is not to be detected. Before the *aortic isthmus*, the lumen of the tube again becomes circular. See also Fig. 951, p. 569.

<sup>129</sup> *Spermatic Artery* (Ibid.).—This artery is called by the author *arteria spermatica interna*, to distinguish it from the *arteria spermatica externa*—the *cremasteric artery* of English anatomists.

<sup>130</sup> *Arteria Hepatica Propria* (Fig. 983, p. 594).—According to the author's nomenclature, the hepatic artery breaks up into a *descending* division, *arteria gastroduodenalis*, and an *ascending* division, *arteria hepatica propria*. The latter gives off the *arteria gastrica dextra* (pyloric artery), and then breaks up into a *ramus sinister* and *ramus dexter* (the left and right hepatic arteries). The term *arteria hepatica propria* has no English equivalent, the artery, from its origin from the coeliac axis to its division into right and left hepatic arteries, being called simply the *hepatic artery*.

<sup>131</sup> *Pyloric Artery* (Ibid.).—This, the *arteria gastrica dextra* of the author, is called by Macalister the *superior pyloric artery*, to distinguish it from a small branch, usually unnamed, of the *gastroduodenal artery*, but called by him the *inferior pyloric artery*.

<sup>132</sup> *Ramus Costalis Lateralis* (Fig. 988, p. 599).—"Among the branches of the internal mammary artery, a not unimportant and somewhat common variety is the existence of the *ramus costalis lateralis*; this arises just above the first rib from the internal mammary trunk, runs obliquely downwards and backwards on the inner surface of the wall of the thorax as far as the fifth or sixth rib, and gives offshoots in the intercostal spaces which anastomose with branches of the intercostal arteries" (Von Langer and Toldt's "Anatomy," p. 513). Quain (*op. cit.*, vol. ii., p. 429) calls this the *lateral branch* of the internal mammary artery, and states that when present it runs "about midway between the spine and sternum, or somewhat further forward." Macalister calls it the *lateral infracostal branch*, and remarks: "The existence of this vessel must be remembered in paracentesis. I have seen it of enormous size in cases of obliteration of the dorsal aorta from the pressure of an intrathoracic tumour" ("Anatomy," p. 554).

<sup>133</sup> *Inner Mammary Branches* (Ibid.).—"The perforating branches (of the internal mammary artery) of the third, fourth, and fifth spaces in the female give *rami mammarii* to the breast" (Von Langer and Toldt, *op. cit.*, p. 513). In Fig. 988, it is the *anterior perforating branch* of the *second right space* that furnishes the largest of these *mammary branches*.

<sup>134</sup> (Ibid.) The *origin of the branches of the subclavian artery* is so variable that it is difficult to decide which arrangement is to be regarded as normal. Von Langer and Toldt describe the *thyroid axis* as supplying four branches: the *inferior thyroid*, the *ascending cervical*, the *superficial cervical*, and the *suprascapular*. Quain states that the *thyroid axis* divides into "the *inferior* or *ascending thyroid*, the *suprascapular*, and a third branch, which is either the *transverse cervical*, or one of the branches into which that artery, when present, divides—viz., the *superficial cervical*" (the other being the *posterior scapular*). Here, however, we see a trunk, called by Toldt the *superficial cervical*, dividing into the *transverse cervical* and (presumably) the *posterior scapular*. Macalister uses the name *posterior scapular* as synonymous with *transverse cervical*, and regards the common origin of the *superficial cervical* and the *posterior scapular* as one of the most frequent arrangements. (See also note <sup>136</sup> below.)

<sup>135</sup> (Ibid.) According to Quain's nomenclature, this trunk would be called the *transverse cervical*, while of the two branches into which it divides, the lower, called here *transversa colli*, is the *superficial cervical*, the upper, apparently, the *posterior scapular*. (See also note <sup>134</sup> above and notes <sup>172</sup> and <sup>208</sup> below.)

<sup>136</sup> (Ibid.) According to the usual English nomenclature, this



artery is still known as the *subscapular* after the *dorsal scapular* branch has been given off. Macalister, however, follows the Continental usage in calling it the *thoracodorsalis* artery. (See note <sup>203</sup> below.)

<sup>137</sup> *Outer Mammary Branches* (Ibid.).—Those shown here are the *anterior divisions* of the *lateral cutaneous (pectoral)* branches of the *intercostal arteries*. (For the origin of these branches, see Fig. 978, p. 589.) Other *outer mammary branches* are normally supplied by the *long thoracic artery* (see Fig. 1017, p. 628), which for this reason is sometimes called the *external mammary artery*.

<sup>138</sup> *Scrotal and Labial (or Vulval) Arteries, Anterior and Posterior* (Ibid.).—As these names are not employed by Quain or Macalister, some explanation is required of the manner in which they are applied by the author. The *superficial or long perineal artery* (see notes <sup>147</sup> and <sup>148</sup> below) terminates by dividing in the anterior half of the perineum (in the triangular intermuscular space beneath Colles's fascia) by dividing into two long slender branches which proceed forwards as the *arteriæ scrotales posteriores*, in the male, to supply the posterior half of the scrotum, and as the *arteriæ labiales posteriores*, in the female, to supply the hinder part of the vulva. The *superior and inferior external pudic arteries* (called by Macalister *superior or superficial pubic* and *inferior pubic*, respectively) are distributed chiefly to the front of the scrotum, in the male, and of the vulva, in the female, by means of terminal branches, *arteriæ scrotales anteriores* and *arteriæ labiales anteriores*, respectively, which anastomose with the posterior scrotal and posterior labial (or vulval) arteries just described. The arteries are accompanied by veins similarly named by Toldt, the *posterior scrotal (or labial) veins* being tributaries of the *superficial or long perineal vein*; and the *anterior scrotal (or labial) veins* opening into the *external pudic veins*.

<sup>139</sup> *Internal Pudic Artery* (Fig. 989, p. 600).—This is called by Macalister the *pudic artery* without qualification, since the small branches of the epigastric artery commonly denominated *external pudic* are by him termed the *pubic arteries* (see note <sup>138</sup> above).

<sup>140</sup> *Pelvic Diaphragm* (Ibid.).—As used by English anatomists, this denotes the *levator ani* and the *coccygeus* or *levator coccygis muscles*; the author, however, includes under this designation, in addition to the muscles themselves, the *rectal fascia* covering their upper surface (*fascia diaphragmatis pelvis superior*) and the *anal fascia* covering their lower surface (*fascia diaphragmatis pelvis inferior*). See Part IV. of this work, Fig. 881, p. 513.

<sup>141</sup> *Arteria Penis* (Ibid.).—The name of *\*artery of the penis* is given by the author to the distal portion of the *internal pudic artery* of English anatomists, after it has left the ischiorectal fossa, and before it bifurcates into the *artery of the corpus cavernosum* and the *dorsal artery of the penis*. The *artery of the bulb* is derived from this portion of the trunk.

<sup>142</sup> *Diaphragma Urogenitale* (Ibid.).—The name of *urogenital diaphragm* is given by the author to the *triangular ligament of the urethra* of English anatomists, including the muscle contained between the two layers of that ligament—the *constrictor* or *compressor urethræ*. (See Appendix to Part IV. of this work, note <sup>99</sup>.)

<sup>143</sup> *Inferior Vesical and Middle Hemorrhoidal Arteries* (Ibid.).—Quain gives *vesicoprostatic artery* as an alternative name for the *inferior vesical artery* in the male. A slender offset is seen in Fig. 989 passing to the rectum from the lower part of this vessel, and no other branch is shown in the figure representing the *middle hemorrhoidal* or *middle rectal artery*, which is, however, usually much larger, and may be derived either from the *inferior vesical* or from the *internal pudic artery*.

<sup>144</sup> *Inferior Vesical Artery* (Fig. 990, p. 601).—Quain gives *vesicoprostatic artery* as an alternative name for this artery in the male.

<sup>145</sup> *Alcock's Canal* (Ibid.).—In the ischiorectal fossa the internal pudic artery runs in a canal in the substance of the obturator fascia, known as *Alcock's canal*. In Fig. 990 this canal has been opened to show the artery, except for a distance of about a quarter of an inch in front. For the nomenclature of the internal pudic artery, see note <sup>139</sup> above.

<sup>146</sup> (Ibid.) Quain gives *external hemorrhoidal* as an alternative name for this artery; Macalister calls it the *anal artery*.

<sup>147</sup> *Arteria Perinei* (Ibid.).—English anatomists usually describe two *perineal branches* of the *internal pudic artery*: the *superficial or long perineal artery*, which arises near the front of the ischiorectal fossa, passes either superficial to or beneath the *transversus perinei (superficialis)* muscle, and runs forward in the triangular intermuscular space beneath Colles's fascia, to terminate in the *posterior scrotal* or *posterior labial* branches and anastomose with the *anterior scrotal* or *labial* offsets of the *external pudic branches* of the *femoral artery* (see note <sup>139</sup> above); and the *transverse perineal artery*, generally arising in common with the preceding, but sometimes a distinct branch, which runs inwards towards the central point of the perineum, and supplies the parts between the anus and the bulb of the urethra. Toldt calls these two branches indifferently the *arteriæ perinei*.

<sup>148</sup> *Ligamentum Umbilicale Laterale* (Ibid.).—After the cessation of the placental circulation at birth, the hypogastric artery becomes impervious from the side of the bladder up to the umbilicus, and is converted into a fibrous cord. In England this is usually spoken of as the *obliterated hypogastric artery*, but the author calls it the *\*external umbilical ligament* (in contradistinction to the *\*median umbilical ligament* or *urachus*). The fold of peritoneum which covers this structure as it runs along the posterior surface of the anterior abdominal wall is called by the author *plica umbilicalis lateralis*, the *external umbilical fold*; but in England it is more often known by the name of the *hypogastric fold*. See Fig. 635, p. 386, and Fig. 636, p. 387, in Part III. of this work.

<sup>149</sup> *\*Perineal Artery* (Fig. 991, p. 602).—The short trunk called by the author *arteria perinei* is seen to divide almost immediately into a posterior branch, the *transverse perineal artery*, and an anterior branch, the *superficial or long perineal artery*. See note <sup>147</sup> above.

<sup>150</sup> (Ibid.) Quain gives *external hemorrhoidal* as an alternative name for this artery; Macalister calls it the *anal artery*.

<sup>151</sup> (Ibid.) The *superficial layer of the obturator fascia* where it covers the *internal pudic artery* has been removed throughout the whole length of *Alcock's canal*. See note <sup>145</sup> above.

<sup>152</sup> *Urethral Artery* (Fig. 992, p. 603).—This may arise (as here) from the *artery of the bulb*, or separately from the trunk of the *internal pudic artery*.

<sup>153</sup> *M. Transversus Perinei Profundus* (Ibid.).—For the nomenclature of this muscle, see Appendix to Part IV., note <sup>101</sup>.

<sup>154</sup> *Arteria Cruris Penis* (Ibid.).—In addition to the principal *artery of the corpus cavernosum (arteria profunda penis)*, small offsets, usually two or three in number, pass to the crus from the trunk of the *internal pudic artery*, just behind its terminal bifurcation. These are left unnamed in most English works on anatomy, but may be called *arteries of the crus penis*.

<sup>155</sup> (Fig. 993, p. 604.) Just behind the *superficial or long perineal artery*, running transversely inwards to the space between the anus and the vaginal orifice (i.e., the *obstetrical perineum*) is the *transverse perineal artery* of English anatomists. (See note <sup>147</sup> above.)

<sup>156</sup> *Arteria Clitoridis* (Ibid.).—Just as, in the male, the *internal pudic artery* of English anatomists becomes, in the author's

nomenclature, the artery of the penis as soon as it leaves the ischio-rectal fossa (see note <sup>141</sup> above), so, in the female, it becomes the artery of the clitoris, which gives off the artery of the bulb (*arteria bulbi vestibuli*—see Fig. 994, p. 605, and Fig. 996, p. 607) to the vaginal bulb or bulb of the vestibule, and terminates by dividing into the artery of the corpus cavernosum of the clitoris (*arteria profunda clitoridis*) and the dorsal artery of the clitoris (*arteria dorsalis clitoridis*).

<sup>147</sup> *Superficial or Long Perineal Artery* (Fig. 994, p. 605).—In the female, this artery is considerably larger than in the male, as will be seen by a comparison of Fig. 994, p. 605, with Fig. 991, p. 602. The foremost of the branches indicated by the author in Fig. 994 as *arteria hemorrhoidales inferiores* represents the transverse perineal artery of English anatomists—see notes <sup>147</sup> and <sup>149</sup> above.

<sup>148</sup> (Ibid.) Represented here by several twigs, instead of the single stem normally given to the anus by the internal pudic artery, and called by Macalister the anal artery. But see also the second sentence in note <sup>147</sup> above.

<sup>149</sup> *Bulbus Vestibuli* (Ibid.).—Regarding the nomenclature of this structure, see Appendix to Part IV., note <sup>91</sup>.

<sup>150</sup> *Vaginal Arteries* (Fig. 995, p. 606).—The arrangement of these in this specimen is worthy of note. The uterine artery, after crossing beneath the ureter and then running parallel with it for a considerable distance, gives off two branches which pass in front and behind the ureter, respectively, and then turn upwards to unite again into a considerable branch of the internal pudic artery. From the two arches thus formed, numerous small offsets are given to the vagina and the lower part of the bladder. For an account of the normal arrangement of the vaginal arteries, see note <sup>168</sup> below.

<sup>151</sup> (Ibid.) The left ilio-lumbar artery in this specimen is very much smaller than usual, and arises from the common iliac artery, instead of, as is normally the case, from the internal iliac prior to its breaking up into anterior and posterior divisions.

<sup>152</sup> *Arteria Vesicales* (Ibid.).—The arteries called vesical in Fig. 995 are the terminal offsets merely, not the vesical arteries proper. No superior vesical artery is depicted in this specimen; and the inferior vesical artery (or vesicovaginal artery) is represented by the branch of the internal pudic artery which contributes to form the arterial arches mentioned in note <sup>160</sup> above.

<sup>153</sup> *Vaginal Arteries* (Fig. 997, p. 608).—The upper part of the vagina (with the cervix uteri) is supplied by a special branch of the uterine artery, and it is this branch which in the left side of Fig. 997 is by the author denominated the vaginal artery. The lower part of the vagina is separately supplied. In the right side of Fig. 997 the author depicts vaginal arteries for this region arising from the internal pudic artery; in Fig. 995, p. 606, a somewhat similar arrangement is shown; while in Fig. 1074, p. 677, a larger branch for the lower part of the vagina arises in common with the internal pudic. According to Quain ("Anatomy," 10th ed., vol. ii., part ii., p. 474), "the vaginal artery (vesicovaginal) in the female corresponds to the inferior vesical artery (vesicoprostatic) in the male. Arising from the anterior division of the internal iliac, or frequently from the uterine artery, it descends and ramifies upon the vagina, sending at the same time offsets to the lower part of the bladder, to the bulb of the vestibule, and to the contiguous part of the rectum. It anastomoses behind the vagina with the corresponding artery of the opposite side." The fact is that the vagina is normally supplied with blood from both the sources mentioned, the branch from the uterine (which might be termed the superior vaginal artery) and the branch from the inferior vesical artery (which might be termed the inferior vaginal artery) varying inversely with one

another in size. In Fig. 997 is shown a slender vertically disposed artery occupying the median line of the posterior surface of the vagina; this is often much larger than in the specimen here figured, being supplied by offsets from both the superior and the inferior vaginal arteries, and is termed the azygos artery of the vagina. It is well shown in a plate by Hyrtl, reproduced as plate vi. of Hart and Barbour's "Gynecology," 3rd ed., 1886, facing p. 68.

<sup>154</sup> (Fig. 998, p. 610.) The ophthalmic artery terminates by dividing into the frontal and nasal branches. Macalister follows the Continental terminology in speaking of the latter as the *arteria dorsalis nasi*.

<sup>155</sup> *Angular Artery* (Ibid.).—The facial artery is described by English anatomists as terminating usually by division into the lateral nasal and angular arteries, the latter being the slender twig which inosculates at the inner side of the orbit with the nasal branch of the ophthalmic artery. Toldt, however, gives the name of *arteria angularis* to the facial as soon as it has given off the coronary artery of the upper lip, and the lateral nasal artery is not mentioned by him. The last-named artery in the present specimen is represented by two or three slender twigs seen ramifying on the side of the nose.

<sup>156</sup> *Facial Artery* (Ibid.).—Quain gives *external maxillary*, and Macalister *external mandibular*, as an alternative name for this artery; but it is so rarely in England called anything but the facial artery that I have not thought it necessary to mention these synonyms in the text. Conversely, the *internal maxillary* is sometimes, though rarely, spoken of as the *deep facial artery*.

<sup>157</sup> (Ibid.) The hyoid branch of the lingual artery usually runs along the upper border of the hyoid bone (in the figure, however, along the outer side of the great cornu), and is called by Macalister the *suprahyoid artery*.

<sup>158</sup> (Ibid.) Very often called the *temporal artery*, without qualification. It has, however, to be distinguished from the anterior and posterior deep temporal branches of the internal maxillary artery, and from its own middle deep temporal (middle temporal) branch.

<sup>159</sup> *Sternocleidomastoid Artery* (Ibid.).—This is described by Von Langer and Toldt as a special branch arising from the posterior side of the external carotid artery above the hyoid bone, and arching downwards and outwards to enter the inner side of the sternocleidomastoid muscle. It is described also by Macalister, but not by Quain. It varies inversely in size with the sternocleidomastoid branches of the occipital and superior thyroid arteries, and is sometimes absent.

<sup>170</sup> *Acromial Rete* (Ibid.).—This name is sometimes given to the arterial network formed on the upper surface of the acromion by anastomosing branches of the *acromiothoracic*, *supra-scapular*, and *posterior circumflex arteries*. I may add that the word *rete* in this section of the "Atlas" is used without qualification only in speaking of arterial retia. The venous retia are always distinguished by the qualifying adjective.

<sup>171</sup> *Arteria Labialis Inferior* (Fig. 999, p. 611).—Macalister describes the inferior labial artery as dividing into two branches: an upper, the inferior coronary artery, which runs near the free margin of the lower lip; and a lower, the superficial mental artery. Quain mentions the inferior labial artery and the coronary artery of the lower lip as being sometimes distinct branches of the facial artery, but sometimes arising in common from that artery.

<sup>172</sup> *Arteria Transversa Colli* (Ibid.).—Fig. 999 shows what the author describes as the normal distribution of the branches of the subclavian artery, in which the superficial cervical artery arises from the thyroid axis, while the transverse cervical artery, arising



separately from the subclavian trunk, terminates by dividing into ascending and descending branches, the former running upwards among the muscles of the neck to anastomose with the cervical or descending branch of the occipital artery (see note <sup>10</sup>, p. 611), the latter becoming the posterior scapular artery. In Macalister's terminology the ramus ascendens is called the cervical branch of the transverse cervical or posterior scapular artery. The artery in question (ramus ascendens) has no regular place in Quain's terminology, for that author describes a transverse cervical artery from the thyroid axis, dividing into superficial cervical and posterior scapular arteries, as the most usual arrangement. In his account of the varieties, however, of the branches of the subclavian artery, Quain states that "The transverse cervical branch of the thyroid axis not infrequently consists solely of the superficial cervical artery; and it often happens that the vessel derived from the thyroid axis is very small, and represents only in part the superficial cervical artery, a large vessel being given off from the second or third part of the subclavian, and dividing near the levator anguli scapulæ into two branches, of which one ascends and represents the larger portion of the superficial cervical artery, while the other forms the posterior scapular" (*op. cit.*, vol. ii., p. 427). In this variety we have the arrangement described by Toldt as normal. See also notes <sup>134</sup> and <sup>135</sup> above and note <sup>5</sup> to p. 629.

<sup>173</sup> *Cricothyroid Artery* (Fig. 1000, p. 612).—Called by Macalister the inferior laryngeal branch of the superior thyroid artery. This artery is endangered in the operation of laryngotomy.

<sup>174</sup> *Superior Phrenic Arteries* (Ibid.).—Several branches to the upper surface of the diaphragm are supplied by the internal mammary artery. I. The *comes nervi phrenici* of English authors, called by Toldt *arteria pericardiophrenica*, shown here on both sides, accompanies the phrenic nerve, and supplies pericardial as well as phrenic branches. Quain gives superior phrenic as an alternative name for this artery. II. The internal mammary terminates by dividing into superior epigastric and musculophrenic branches, the latter giving off the three lowermost anterior intercostal arteries as well as supplying the diaphragm. III. On the right side of Fig. 1000, the author shows another branch supplied to the diaphragm by the internal mammary artery, and this he names *arteria phrenica superior*.

<sup>175</sup> *Thymic Artery* (Ibid.).—This small offset, which in the adult supplies the remains of the thymus gland, is one of the anterior mediastinal branches of the internal mammary artery.

<sup>176</sup> *Posterior Meningeal Artery* (Fig. 1001, p. 613).—This name is, in England, more often given to the meningeal branch of the vertebral artery (see Fig. 1003, p. 615, and Fig. 1007, p. 619) than to the meningeal branch of the ascending pharyngeal artery. The name is, however, equally applicable to both; and, in fact, the ascending pharyngeal usually supplies the dura mater with a larger vessel than that derived from the vertebral artery.

<sup>177</sup> *Costocervical Axis* (Ibid.).—This name for the trunk by which the superior intercostal and the deep cervical arteries usually arise in common from the second part of the subclavian artery is used by Macalister, but not by Quain.

<sup>178</sup> \**Deep Branch of the Ascending Cervical Artery* (Fig. 1003, p. 615).—"A very variable offset of the ascending cervical artery, known as the *ramus profundus*, passes backwards to the deep muscles of the back of the neck" (Von Langer and Toldt, *op. cit.*, p. 512). Neither Quain nor Macalister distinguishes this branch by name from the other muscular offsets of the ascending cervical artery.

<sup>179</sup> *Lachrymal Gland* (Fig. 1004, p. 616).—Regarding the distinction made by the author, and by some English anatomists

also, between the two portions of this gland, named respectively superior and inferior lachrymal gland, see note <sup>1</sup> to p. 911 in Part VI. of this work.

<sup>180</sup> \**Arteria Labialis Inferior* (Ibid.).—The upper of the two vessels denoted in Fig. 1004 by the name of inferior labial artery is called by Quain the coronary artery of the lower lip; and by Macalister, the inferior coronary artery. The lower of the two is itself the inferior labial artery in Quain's nomenclature, whilst Macalister calls it the superficial mental artery. See note <sup>171</sup> above.

<sup>181</sup> *Rami Gingivales Superiores* (Fig. 1005, p. 617).—As is well shown in the figure, the superior gingival branches are offsets of an anastomotic arch lying below the malar process on the zygomatic and anterior or facial surfaces of the superior maxillary bone, this arch being formed behind by the posterior (superior) dental (or alveolar) artery, and in front by a branch of the infra-orbital artery.

<sup>182</sup> *Ramus Tonsillaris* (Ibid.).—In this preparation (Figs. 1005 and 1006) and in the two next following (Figs. 1007 and 1008), the inferior or ascending palatine artery furnishes a tonsillar branch. Sometimes, however, this branch is wanting, and a separate tonsillar artery arises from the facial trunk.

<sup>183</sup> *Arteria Tympanica* (Ibid.).—Four tympanic arteries are described in Von Langer and Toldt's "Anatomy": The anterior tympanic, derived from the deep auricular branch of the internal maxillary artery; the posterior tympanic, a branch of the stylo-mastoid artery, which is itself derived from the posterior auricular artery; the superior tympanic, derived from the middle or great meningeal artery; and the inferior tympanic, derived from the ascending pharyngeal artery. By Quain these are termed the tympanic branches (without further qualification) of their respective trunks. The petrosal or Fallopiian branch of the middle or great meningeal and the tympanic branch furnished by the internal carotid artery in the carotid canal also supply the tympanum. By their anastomoses the tympanic vessels form a vascular circle round the margin of the membrana tympani. The anterior tympanic artery is seen on p. 617, the superior tympanic artery on p. 621.

<sup>184</sup> *Arteria Ethmoidales et Arteria Nasaes Anteriores Septi* (Fig. 1006, p. 618).—These small branches of the ophthalmic artery are variously named in England. Internal nasal is an occasional synonym for the anterior ethmoidal artery. Quain, in the section on Angiology, calls the nasal branch of the anterior ethmoidal the anterior nasal artery; in the section on the Organs of the Senses, however, the branches shown in Fig. 1006 ramifying on the septum are termed by him the septal branches of the anterior and posterior ethmoidal arteries.

<sup>185</sup> *Arteria Sphenopalatina* (Ibid.).—The sphenopalatina or nasal artery, a branch of the third (terminal) part of the internal maxillary artery in the sphenomaxillary fossa (its origin is shown in Figs. 1005 and 1007), enters the nasal fossæ through the sphenopalatine foramen. The pterygopalatine or pterygopharyngeal artery, which passes backwards through the canal of the same name (*canalis pharyngeus*, according to Toldt) to supply the fornix of the pharynx and the sphenoidal sinus, is often a branch of the sphenopalatine artery, but is sometimes separately derived from the internal maxillary trunk. Macalister further describes a descending pharyngeal branch of the sphenopalatine artery, but this is mentioned neither by Quain nor by Von Langer and Toldt. The sphenopalatine artery is distributed chiefly to the nasal fossæ, its branches being called by Von Langer and Toldt *arteria nasaes posteriores, laterales, et septi*, and by Macalister the posterior nasal arteries. "One long branch, the nasopalatine artery or artery of the septum, runs downwards and forwards in the groove on

the vomer, and ends in a small vessel which enters the incisor foramen to communicate with the descending palatine artery" (Quain, *op. cit.*, vol. ii., p. 406). According to Macalister's nomenclature, the *nasopalatine artery* divides into *superior* and *inferior* branches, the latter being that which passes through the incisor foramen. Von Langer and Toldt regard the *arteria nasopalatina* as the terminal branch of the *arteria palatina descendens*, which ascends through the incisor foramen (canal of Stensen) to anastomose with one of the *arteria nasales* previously mentioned (see note <sup>183</sup> below). These are merely two different ways of regarding the same anatomical data.

<sup>188</sup> *Rami Dorsales Linguae* (Ibid.).—The *lingual artery* may supply a single *dorsal artery of the tongue* on either side, or (as here) several *dorsal lingual branches*.

<sup>187</sup> *Internal Carotid Artery* (Ibid.).—Two branches are given off from the second or intra-osseous portion of this vessel: (1) the *tympanic branch* (*ramus caroticotympanicus*), which passes through one of the caroticotympanic canaliculi and anastomoses with the other *tympanic arteries* (see note <sup>183</sup> above); and (2) the *Vidian branch* (not shown in Fig. 1006), which anastomoses with the *Vidian branch* (*arteria canalis pterygoidei Vidiani*) of the *internal maxillary artery*.

<sup>183</sup> *Arteria Palatina Descendens*, \**Arteria Palatina Major*, et \**Arteria Palatina Minores* (Fig. 1007, p. 619).—The *superior* or *descending palatine artery*, arising in the sphenomaxillary fossa from the third (terminal) portion of the *internal maxillary artery* (see Fig. 1005, p. 617), sometimes gives off the *Vidian artery*, which may, however, arise separately from the *internal maxillary trunk*; it also gives small branches which descend in the posterior and external accessory palatine canals to supply the soft palate and the tonsil—these, called by Toldt \**arteria palatina minores*, are left unnamed by Quain and Macalister, but may be termed the \**accessory palatine arteries*; descending in the posterior palatine or palatomaxillary canal, the *superior* or *descending palatine artery* emerges on the inferior surface of the hard palate accompanied by the large palatine nerve, and runs forward in one of the \**palatine grooves*; in this situation its name is unchanged in the English nomenclature; the author, however, now calls it \**arteria palatina major*, the \**great palatine artery*; the vessel terminates, as described in note <sup>183</sup> above, by ascending through Stensen's canal to anastomose with the *nasopalatine artery* or *artery of the septum*.

<sup>180</sup> *Rami Gingivales Inferiores* (Ibid.).—The *inferior gingival branches* are derived partly from the *sublingual artery*, partly, also, from the *submental artery*, and from the *mylohyoid branch* of the *inferior dental* (or *alveolar*) *artery*.

<sup>190</sup> *Meningeal Branch of the Vertebral Artery* (Ibid.).—It is to this vessel that the name of *posterior meningeal artery* is commonly applied by English anatomists. The small vessel seen emerging from the jugular foramen, to which the name *arteria meningeae posterior* is given by the author, is an offset of the *ascending pharyngeal artery*. (See also note <sup>178</sup> above.)

<sup>191</sup> \**Arcus Raninus* (Fig. 1008, p. 620).—"Near the tip of the tongue the two *ranine arteries* communicate by means of a small loop (Krause), but with this exception the right and left arteries do not form other than capillary anastomoses" (Quain, *op. cit.*, vol. ii., p. 396).

<sup>193</sup> *Rami Musculares Arteriae Ophthalmicae* (Fig. 1010, p. 621).—Some of these are named by English anatomists. Quain writes: "Small *muscular* offsets arise at uncertain intervals from the trunk of the *ophthalmic artery*, as well as from the *lacrimal* and *supra-orbital branches*; in addition to these there are two more regular branches, an *external*, which is distributed to the upper

and outer muscles of the orbit, and an *internal*, larger and more constant, to the lower and inner muscles" (*op. cit.*, p. 409). Macalister calls these branches *superior* and *inferior muscular*, respectively, and describes also a special *muscular artery to the external rectus*.

<sup>193</sup> *Ramus Orbitalis Arteriae Meningeae Mediae* (Var.) (Ibid.).—There is normally a small communicating branch, called by Quain the *orbital branch* of the *middle* or *great meningeal artery*, passing from the trunk of this vessel or from its anterior division through the outer end of the sphenoidal fissure (or through a special aperture in the great wing of the sphenoid bone) to join a branch of the *lacrimal artery*, and the *ramus orbitalis* here figured is a larger homologue of this vessel. Macalister names it the *lacrimal branch* of the *middle meningeal artery*, and in one place (*op. cit.*, p. 582) describes it as supplying the *lacrimal gland*; in another (p. 657), he states that the *lacrimal artery* (*ex arteria ophthalmica*) "receives a large branch through the sphenoidal fissure from the *middle meningeal artery*, this branch varying inversely in size with the *lacrimal artery* itself."

<sup>194</sup> *Arteria Tympanica Superior* (Ibid.).—Usually known in England by the name of the *tympanic branch* of the *middle* or *great meningeal artery*. (See note <sup>183</sup> above.)

<sup>193</sup> *Arteria Cerebelli* (Fig. 1011, p. 622).—Some confusion is liable to arise regarding the nomenclature of the *cerebellar arteries*, and for this reason the use of double names is better avoided, and I adhere to those employed by Macalister. These vessels are three in number, two being offsets of the *basilar artery*, the third being derived from the *vertebral*: (1) *Arteria cerebelli inferior anterior*, the *anterior cerebellar artery* (Macalister); this arises from the posterior extremity of the *basilar artery*; Quain calls it the *anterior (inferior) cerebellar artery*, Ellis the *anterior cerebellar artery*. (2) *Arteria cerebelli superior*, the *superior cerebellar artery* (Macalister), this arises from the anterior extremity of the *basilar artery*, being commonly described as one of the terminal branches of that vessel; Quain and Ellis also call this the *superior cerebellar artery*. (3) *Arteria cerebelli inferior posterior*, the *posterior cerebellar artery* (Macalister); this arises from the *vertebral artery*; Quain calls it the (*posterior*) *inferior cerebellar artery*, Ellis the *inferior cerebellar artery*.

<sup>194</sup> *Operculum* (Fig. 1012, p. 623).—This name is given to the portions of the frontal and parietal lobes lying between the ascending and posterior branches of the fissure of Sylvius, and covering the upper part of the central lobe or Island of Reil. It is sometimes called more fully the *operculum of the insula*; sometimes, also, the *operculum of Burdach*.

<sup>197</sup> \**Vena Mediana Colli* (Figs. 1015, 1016, p. 626).—"When both *anterior jugular veins* are absent, or very small, we find in the median line the \**median vein of the neck*, the radicles of which are beneath the chin, and which runs in the superficial fascia towards the *suprasternal notch* (or *fossa jugularis*); in this region it usually bifurcates into right and left branches, which enter the \**jugular venous arch* in the *spatium interaponeuroticum suprasternale* [*suprasternal space*, or *Burns's space*—see note <sup>123</sup> above], or the lower part of the *median vein of the neck* may itself form part of the \**jugular venous arch*" (Von Langer and Toldt, *op. cit.*, p. 542). Quain states that the *anterior jugular vein* varies greatly in size, and that the right and left veins may sometimes be united into a single median vessel for a part of their length. Macalister uses the term *vena mediana colli* as a synonym for the *anterior jugular vein*.

<sup>198</sup> (Fig. 1015, p. 626).—Called by Macalister *nervus descendens cervicis*. This branch is, however, still very commonly known by the old name of *descendens noni*, the *hypoglossal nerve*, the *twelfth*



cranial nerve of Soemmerring, being the ninth cranial nerve, *nervus nonus*, in the enumeration of Willis.

<sup>199</sup> *N. Cervicalis Descendens* (Ibid.).—This name is given here, but not in the section on Neurology, nor in Von Langer and Toldt's "Anatomy," to one of the communicating branches of the cervical plexus which join the descending cervical branch of the hypoglossal nerve (see note <sup>198</sup> above) to form the *ansa hypoglossi*.

<sup>200</sup> *Sinus Vertebralis Longitudinalis* (Ibid.).—"A double vertically disposed series of anastomoses also belongs to the internal vertebral venous plexuses. These are situated on the posterior surfaces of the bodies of the vertebræ, and connect the adjoining vertebral venous plexuses. Taken as a whole they constitute the so-called \*longitudinal vertebral sinuses, which extend as two parallel vascular chains on either side of the posterior common ligament right down to the coccyx" (Von Langer and Toldt, *op. cit.*, p. 540). Quain calls them the anterior longitudinal spinal veins; and this author describes also two posterior longitudinal spinal veins, between the dura mater and the posterior wall of the spinal canal. They are, however, "often much broken up in parts of their course." The term \*longitudinal vertebral sinus is not current in England, but Macalister, writing of the internal vertebral venous plexuses, remarks: "The whole system is extra-thecal, but within the periosteum of the canal, and therefore on the same horizon as the system of cerebral sinuses" ("Anatomy," p. 260).

<sup>201</sup> *Venæ Intervertebrales* (Fig. 1016, p. 626).—The intervertebral veins, in the author's terminology, are those that drain the blood from the vertebral venous plexuses through the intervertebral foramina, passing, according to the region in which they issue, to the vertebral veins, the posterior branches of the intercostal and lumbar veins, and the lateral sacral veins. See also note <sup>203</sup> below).

<sup>202</sup> *Layers of the Deep Cervical Fascia* (Ibid.).—Macalister enumerates these as follows: (1) The *suprasternomastoid layer*; (2) the *substernomastoid layer*, which splits into two at the outer side of the great vessels of the neck, thus forming the *carotid sheath*, the posterior layer of this sheath being continuous with (3) the *post-pharyngeal fascia*, which passes from side to side across the median line behind the constrictors of the pharynx; (4) the *pretracheal fascia* passes from side to side from the front of the carotid sheath anterior to the trachea, and between this layer and the *suprasternomastoid* or *superficial layer* is *Burns's space* (see note <sup>197</sup> above), while below the pretracheal fascia passes into the thorax to join the pericardium as *Godman's fascia*; (5) the deepest transverse layer is the *prevertebral fascia* posterior to the post-pharyngeal fascia, but not distinguished from it in Figs. 1015 and 1016.

<sup>203</sup> *Subscapular Artery* (Fig. 1017, p. 628).—According to Quain's nomenclature, which is that usually accepted in England, the *subscapular artery* gives off a large *dorsal branch*, the *dorsal scapular artery*, *arteria dorsalis scapulæ*; and its downward continuation, often smaller than the dorsal branch, still receives the name of *subscapular artery*. According to Toldt, however, the *arteria subscapularis*, after giving off the *arteria circumflexa scapulæ* (i.e., the dorsal branch aforesaid), becomes the *arteria thoracodorsalis*; and Macalister uses a similar terminology, describing the *long subscapular artery* as dividing into *dorsalis scapulæ* and *thoracodorsalis*. He distinguishes the main trunk as the *long subscapular*, because one or two *short subscapular branches* (*rami subscapulares* according to Toldt) are given off by the axillary artery directly to the subscapularis muscle.

<sup>204</sup> (Ibid.) *Arteria thoracalis lateralis*, the *long thoracic artery*, supplies *rami mammarii*, *external mammary branches*, larger in the

female than in the male, and especially large during lactation. The *long thoracic* itself is sometimes called the *external mammary artery*.

<sup>205</sup> *Parts of the Subclavian Artery* (Ibid.).—Von Langer and Toldt divide the subclavian artery into two parts only: the *thoracic part* extends from the commencement of the vessel to its emergence from the \*scalene space (see note <sup>1</sup> to p. 277 in Part III. of this work); the *cervical part*, comprising the remainder of the artery, between the outer border of the scalenus anticus muscle and the lower border of the subclavius muscle, lies deep in the (greater) supraclavicular fossa. English authorities divide the vessel into three parts, *first*, *second*, and *third* (Macalister giving as alternative names, *pectoral*, *intermuscular*, and *cervical* stages). The *first part*, internal to the scalenus anticus muscle, and the *second part*, behind that muscle, thus correspond to the *thoracic part* of Von Langer and Toldt; while the *third* or *cervical part* of English authors is nearly identical with the *cervical part* of Von Langer and Toldt, the only difference being that by the former the outer border of the first rib, by the latter the lower border of the subclavius muscle, is regarded as marking the boundary between the subclavian and the axillary artery.

<sup>206</sup> *Branches of the Axillary Artery* (Fig. 1018, p. 629).—These are somewhat variable in their number and distribution, and they are very variously named by different authorities. By Von Langer and Toldt they are arranged in four groups, distributed respectively to the anterior, the posterior, the internal and the external wall of the axilla. I. *Branches to the Anterior Wall of the Axilla*: 1. *Arteria thoraco-acromialis*, usually known in England as the *acromiothoracic artery*, sometimes called the *acromial thoracic*, and by Macalister termed the *thoraco-acromial artery*; the named offsets of this vessel are four in number: *ramus subclavius*, the *clavicular branch*; *ramus pectoralis*, the *pectoral* or *thoracic branch* (there may be two or more of these, and among them in females is often an *external mammary branch*); *ramus acromialis*, the *acromial branch*, to the *acromial rete* (see note <sup>170</sup> above); and *ramus deltoideus*, the *descending* or *humeral branch*, which runs downwards beside the cephalic vein in the deltoideopectoral groove (see Part III., p. 282, Fig. 523). 2. *Arteria thoracalis suprema*, the *superior* or *short thoracic artery*, described by Von Langer and Toldt as an "occasional" branch; this vessel is often derived from the *acromiothoracic artery*—an arrangement described by some anatomists as normal, the *acromiothoracic trunk* being then often called the *thoracic axis*, especially when the remaining *thoracic branch* (presently to be described), the *long thoracic artery*, has the same origin. II. *Branches to the Posterior Wall of the Axilla*: 3. *Arteria subscapularis*, the *subscapular artery*, called by Macalister the *long subscapular artery* (see note <sup>203</sup> above): the principal branch of this is the *arteria circumflexa scapulæ*, the *dorsal branch* of the subscapular artery, *dorsalis scapulæ*, or *dorsal scapular artery* of English authors, which passes backwards through the \*internal axillary space (see Part III., p. 312, Fig. 599, and note <sup>1</sup> to same page) or *subscapular triangle* (Macalister) to reach the infraspinous fossa; the *dorsal scapular artery* gives to the subscapular fossa what are variously described as *ventral branches* (Quain), *deep subscapular branches* (Macalister), or *infrascapular offset* (Ellis), and among the terminal offsets of this branch (or these branches) are the *ventral nutrient artery of the scapula* and the *superior articular artery of the shoulder*; in addition, the *dorsalis scapulæ* gives a *descending branch* (called by Young the *median branch*) which runs in the groove between the origins of the *teres minor* and *teres major* muscles to the inferior angle of the scapula: the continuation of the *subscapular artery* (commonly smaller than the *dorsal branch*) is renamed by Toldt *arteria thoracodorsalis*, and Macalister

follows the Continental usage in terming it the *thoracodorsalis artery*, but by most English anatomists it is still called *subscapular artery* in this part of its course; it terminates in muscular branches to the latissimus dorsi, serratus magnus, teres major, and teres minor muscles. III. *Branches to the Internal Wall of the Axilla*: 4. *Arteria thoracalis lateralis*, the long thoracic (or external mammary artery), which gives muscular branches to the serratus magnus, pectoralis major, and pectoralis minor muscle, and *rami mammarii*, external mammary branches (see note <sup>204</sup> above). IV. *Branches to the External Wall of the Axilla*: 5. *Arteria circumflexa humeri anterior*, the anterior circumflex artery (of the arm). 6. *Arteria circumflexa humeri posterior*, the posterior circumflex artery (of the arm), which runs backwards through the \*external axillary space (see Part III., p. 312, Fig. 589, and note <sup>1</sup> to same page) or *quadri-lateral space* (Macalister), and gives numerous offsets, named by Macalister as follows: *Ascending branch*, to the teres minor muscle; *descending branch*, to the long head of the triceps; *nutrient branch*, to the great tuberosity of the humerus; *posterior articular artery*, to the shoulder-joint; *acromial branch*, to the *rete acromiale* (see note <sup>170</sup> above); and an anastomotic branch to the superior profunda branch of the brachial artery. Fifth Group. *Branches not enumerated by Von Langer and Toldt*: 7. The *alar thoracic artery* to the lymphatic glands and fatty tissue of the axilla; this is a very variable branch, and may arise (a) direct from the axillary trunk, (b) from the long thoracic artery, (c) from the thoracic axis (*acromiothoracic artery*). 8. In females there is occasionally an independent external mammary artery, arising from the axillary trunk below the origin of the posterior circumflex artery. Sixth Group. 9. *Rami subscapulares*, the short subscapular arteries, must also be mentioned, usually two in number, small vessels passing backwards from the axillary trunk to the subscapularis muscle.

<sup>201</sup> *Parts of the Axillary Artery* (Ibid.).—By Von Langer and Toldt, as by English anatomists, the axillary artery is divided into three parts, but the limits of these are not exactly identical in the Continental and the English description. As already mentioned (see note <sup>200</sup> above), according to Von Langer and Toldt, the subclavian artery becomes the axillary at the lower border of the subclavius muscle, but according to English anatomists at the outer border of the first rib. It is obvious that the English boundary is more precise, inasmuch as the position of the subclavius muscle varies with the varying elevation of the shoulder. The first part of the axillary artery extends from its commencement to the upper border of the pectoralis minor muscle. The second part of the artery lies beneath (behind) the pectoralis minor muscle. The third part of the vessel extends from the lower border of the pectoralis minor muscle to the termination of the vessel. In this respect, again, there is a difference between the Continental and the English usage, for according to the former, the axillary artery becomes the brachial opposite the lower (outer) border of the pectoralis major muscle; but according to the latter, opposite the lower (outer) border of the teres major muscle. Thus, the third part of the axillary artery, as the term is understood in England, is nearly twice as long as the third part of the vessel as described by Von Langer and Toldt.

<sup>202</sup> *Arteria Cervicalis Superficialis* (Ibid.).—"The superficial cervical artery is distributed to the superficial structures of the (greater) supraclavicular fossa, to the trapezius, levator anguli scapulæ, rhomboideus major, serratus posticus posterior, and splenius capitis muscles. Its size and the area it supplies are exceedingly variable; it may entirely replace the transverse cervical artery (*arteria transversa colli*), or, conversely, be entirely replaced by that vessel. Normally it is one of the principal branches of the

thyroid axis" (Von Langer and Toldt, *op. cit.*, p. 512). Quain's use of the term *superficial cervical artery* is explained in notes <sup>134</sup>, <sup>135</sup>, and <sup>172</sup> above.

<sup>200</sup> *The Branches of the Brachial Artery* (Fig. 1019, p. 630).—

1. *Arteria profunda brachii*, the superior profunda artery (of the arm), which gives the following offsets: (a) *Ramus deltoideus*, the communicating branch (Macalister) or *deltoid branch* (Quain), which anastomoses beneath the deltoid muscle with branches of the posterior circumflex artery; (b) *arteria nutricia humeri*, the nutritious (Macalister) or *medullary branch* (Quain); (c) *arteria collateralis media*, the muscular branch to the inner head of the triceps muscle; (d) *arteria collateralis radialis* (regarded in England as the terminal portion of the superior profunda artery itself), the anterior terminal branch of which passes with the musculospiral nerve through the external intermuscular septum, and anastomoses with the radial and recurrent artery, while the posterior terminal branch passes along the back of the external intermuscular septum, and ends in the *rete olecrani*, anastomosing there with the inferior profunda, anastomotica magna, posterior ulnar recurrent, and interosseous recurrent arteries. There are, further, (e) the muscular branch to the long head of the triceps muscle; (f) a cutaneous branch with the inner cutaneous branch of the musculospiral nerve. 2. *Arteria collateralis ulnaris superior*, the inferior profunda artery, which supplies the inner head of the triceps, and ends in the *rete olecrani* already described. 3. *Arteria collateralis ulnaris inferior*, the anastomotic branch (*anastomotica magna*), which runs in the inner bicipital furrow, perforates the internal intermuscular septum, and joins the *rete olecrani*; it gives an anterior branch which descends between the brachialis anticus and pronator radii teres muscles in front of the internal condyle to anastomose with the anterior ulnar recurrent artery. 4. In addition to the medullary or nutritious branch of the superior profunda, there is another and larger vessel supplied to the humerus called the chief medullary artery, which usually arises in common with the upper muscular branch to the brachialis anticus muscle; the foramen for the chief artery is just below the insertion of the coracobrachialis muscle, that for the nutrient branch of the superior profunda is higher up, near the top of the spiral groove. 5. Small muscular branches are furnished by the brachial artery during its course, and are stated by Macalister to be usually eight in number. 6. According to Macalister, a *vas aberrans*, arising close to or in common with the superior profunda artery, descending over the median nerve, supplying the biceps, and ending by joining the radial (or less commonly the ulnar) artery, is usually present, but often so small as to escape injection; other authorities speak of its presence as exceptional. When large it may replace and simulate the brachial artery, which then appears to be superficial to the median nerve. If moderately large it may replace the ordinary origin of the radial artery (rarely that of the ulnar artery); we thus have the condition, often met with, called the high bifurcation of the brachial artery. "A very interesting variety in the origin of the branches of the brachial artery is that in which the superior profunda artery, the inferior profunda artery, and the anastomotica magna artery all arise by a common stem, from which the circumflex arteries and the subscapular artery are also derived. In such cases, the axillary artery, as it emerges from the axilla, is seen to divide into two trunks of equal size, one of which runs as far as the elbow without giving off any branches of importance, whilst the other supplies the structures of the shoulder and the other arm. This condition resembles that normally met with in the distribution of the femoral artery" (Von Langer and Toldt, *op. cit.*, p. 516).



<sup>200</sup> *Upper Limit of the Brachial Artery* (Ibid.).—As already mentioned in note <sup>207</sup> above, according to Von Langer and Toldt the *axillary artery* becomes the *brachial artery* opposite the lower (outer) border of the *pectoralis major*; but according to English anatomists somewhat lower than this, opposite the lower (outer) border of the *teres major* muscle. The former definition is really a more accurate one, for the vessel is no longer in the axilla after it has emerged from behind the *pectoralis major* muscle. Macalister, indeed, goes further than this, remarking that the whole of the *third stage of the axillary artery* (so-called)—i.e., from the lower border of the *pectoralis minor* to the lower border of the *teres major* muscle—"belongs to the arm, not to the axilla, and should properly be described as part of the brachial artery" ("Anatomy," p. 269). The distinction is, of course, one of definition merely, and has no practical significance.

<sup>211</sup> (Fig. 1020, p. 631.) Partly owing to the independent origin of the muscular branch to the internal or deep head of the *triceps muscle*, *arteria collateralis media*, the distribution of the branches of the *superior profunda artery* differs somewhat in this specimen from the description given in note <sup>209</sup> above (q.v.). Thus, the lower part of the *superior profunda artery*, called by the author *arteria collateralis radialis*, is seen to divide into two branches, the *anterior terminal branch* passing with the musculospiral nerve through the external intermuscular septum, and the *posterior terminal branch* passing to the back of the elbow to join in the formation of the *rete olecrani*. Higher up, a large muscular branch to the external head of the *triceps* is seen.

<sup>212</sup> *Rete Articulare Cubiti, Rete Olecrani, or Arterial Network of the Elbow* (Ibid.).—The vessels taking part in the formation of this plexus have been enumerated in note <sup>209</sup> above.

<sup>213</sup> *Digital Arteries* (Fig. 1022, p. 633).—In England the *palmar digital arteries* are usually spoken of as the *digital arteries* without qualification, the *dorsal digital arteries*, which are very much smaller than the *palmar*, being often ignored, except in the case of the *dorsal arteries of the thumb* and of the *index finger*. Moreover, the distinction made by the author between the *arteriæ digitales volares communes*, the common *palmar digital arteries* (before their bifurcation), and the *arteriæ digitales volares propriæ*, the proper *palmar digital arteries* (after their bifurcation), fully expressed in Quain's nomenclature. The *arteriæ digitales volares propriæ* of Toldt are by Quain termed *digital arteries* without further qualification; and these are said to divide into two *collateral branches* for the respective fingers, the *arteriæ digitales volares propriæ* of Toldt.

<sup>214</sup> *Anterior Annular Ligament of the Wrist* (Ibid.).—I take this opportunity of supplying an omission from the translation of Part III. (already published). The *anterior annular ligament of the wrist* consists of two layers, a *superficial* and a *deep*, the ulnar artery lying between them. The *superficial layer*, called by Toldt *ligamentum carpi volare*, is homologous with the *posterior annular ligament of the wrist* (*ligamentum carpi dorsale* of Toldt), both structures being specialized portions of the superficial layer of the deep fascia of the forearm; this superficial layer is continued below into the palmar fascia. The *deep layer*, called by Toldt *ligamentum carpi transversum*, arches over the median nerve and the nine flexor tendons, forming the anterior wall of the canal of the carpus, and is a specialized band of the intermuscular septum between the *palmaris longus* and the *flexor sublimis* muscles. The distinction between these two layers of the anterior annular ligament is not clearly indicated in all English text-books, but it is emphasized by Macalister (*op. cit.*, p. 309). In the translation of Part III. of this work, pp. 322, 324, 332, 334, I have

rendered the terms *ligamentum carpi volare* and *ligamentum carpi transversum* indifferently as *anterior annular ligament of the wrist*.

<sup>215</sup> *Anterior Carpal Rete* (Fig. 1023, p. 634).—This arterial network lies beneath the lower edge of the *pronator quadratus* muscle, and in front of the carpus. It is supplied by the anterior radial carpal and anterior ulnar carpal arteries (a large communicating branch between these vessels constituting the *anterior carpal arch*); also by the anterior communicating or anterior terminal branch of the anterior interosseous artery, and by the recurrent or ascending branches of the deep palmar arch.

<sup>216</sup> *Superior Perforating Arteries* (Ibid.).—These small vessels, which pass through the proximal extremities of the intermetacarpal spaces, connecting the deep palmar arch with the posterior carpal rete (see note <sup>219</sup> below), are distinguished as *superior perforating* from the *inferior perforating arteries* which pass through the distal extremities of the intermetacarpal spaces, connecting the dorsal interosseous arteries with the (palmar) digital arteries. The *radial artery* itself, as it passes into the palm of the hand between the heads of the first dorsal interosseous (or abductor indicis) muscle, thus represents the *first superior perforating artery*. This is well shown in Fig. 1024.

<sup>217</sup> *Arteria Collateralis Radialis* (Ibid.).—This name is given by the author to the lower part of the *superior profunda artery* (of the arm) of English authors, after it has given off the *arteria collateralis media*, the muscular branch to the inner head of the *triceps* muscle (see notes <sup>209</sup> and <sup>211</sup> above).

<sup>218</sup> (Ibid.). The *large artery of the thumb* and the *radial artery of the index finger*, the last branches furnished by the *radial trunk* before it turns inwards to form the *deep palmar arch*, are commonly known in England by their Latin names of *princeps pollicis* and *radialis indicis arteries*.

<sup>219</sup> *Posterior Carpal Rete* (Fig. 1024, p. 635).—This arterial network lies beneath the extensor tendons on the back of the carpus. It is supplied by the *posterior radial carpal* and *posterior ulnar carpal arteries* (a large communicating branch between these vessels constituting the *posterior carpal arch*); also by the *terminal offsets* of the *anterior* and *posterior interosseous arteries*; while the *superior perforating arteries* (see note <sup>216</sup> above) connect the *posterior carpal rete* with the *deep palmar arch*.

<sup>220</sup> *Dorsal Interosseous Artery* (Ibid.).—The *first dorsal interosseous artery*, called by Macalister the *metacarpal artery*, a branch of the *radial artery*, often arises, as in this instance, in common with the *posterior radial carpal branch*; it runs in the back of the interval between the second and third metacarpal bones. The *second* and *third dorsal interosseous arteries*, arising from the *posterior carpal arch*, are distributed in the back of the third and fourth interosseous spaces. See also note <sup>222</sup> below.

<sup>221</sup> *Superficial Veins seen in Fig. 1028* (p. 638).—The arrangement of the superficial veins in this specimen is not that usually described as normal, but it is a very common variation from the normal, which will be better understood from an examination of the middle specimen of Fig. 1090, p. 697, in which the same arrangement is met with. A description of the *\*median vein of the elbow* is given in note <sup>303</sup> below. In Fig. 1028 the *radial vein*, having already given off the *\*median vein of the elbow*, has become the *cephalic vein* (see note <sup>303</sup> below); but the *ulnar vein* has not yet become the *basilic vein*, as it has not yet been joined by the *\*median vein of the elbow*. This ulnar vein has no doubt been formed by the confluence of *anterior* and *posterior ulnar veins*. In the author's terminology it is the *vena basilica* (see note <sup>306</sup> below). The vein (unnamed in the figure) lying just in front of the ulnar vein is most probably the *median vein* (of the forearm), which has inclined inwards to join the *ulnar vein*.

<sup>222</sup> (Fig. 1031, p. 639.) It will be noticed that the author numbers the *arteria metacarpea dorsales* according to the number of the interosseous space in which they lie. In Quain's nomenclature, however, the *arteria metacarpea dorsalis prima*, being very small, is ignored; and thus the *first dorsal interosseous artery* of Quain (*metacarpal branch of the radial artery*, according to Macalister) corresponds to the *arteria metacarpea dorsalis secunda* of the author. The Continental enumeration of these vessels is much to be preferred. See also note <sup>220</sup> above.

<sup>223</sup> *Femoral Artery* (Fig. 1033, p. 641).—The portion of this vessel above the origin of the *profunda* is often distinguished as the *common femoral*, that below the origin of the *profunda* as the *superficial femoral artery*.

<sup>224</sup> *Internal Circumflex Artery (of the Thigh)* (Ibid.).—According to Von Langer and Toldt's description (*op. cit.*, p. 525), the *arteria circumflexa femoris medialis* divides almost immediately after its origin from the *profunda* into a *ramus superficialis*, distributed to the muscles of Scarpa's space, and a much larger *ramus profundus*, which passes backwards between the pectineus and iliopsoas muscles above the small trochanter to the back of the neck of the femur and supplies the *ramus acetabuli* to the hip-joint. According to the description given by Quain, the *ramus superficialis* corresponds to unnamed *muscular branches*, while the *ramus profundus* is the continuation of the *internal circumflex artery* itself; arrived at the back of the femur it supplies an *articular branch*, the author's *ramus acetabuli*, the development of which is inversely proportional to that of the *articular branch of the obturator artery*; the internal circumflex finally divides into *ascending and transverse branches*, the former following the tendon of the obturator externus muscle to the digital or trochanteric fossa, and the latter ending in the *crucial anastomosis* (see note <sup>220</sup> below).

<sup>225</sup> *Rete Patellæ* (Ibid.).—The *patellar rete* is that portion of the *rete articulare genu*, the *\*articular rete of the knee*, which lies immediately in front of the patella. The term *patellar rete* is used by Macalister to denote the whole of the articular network of the knee; but Toldt limits the application of *rete patellæ* as above defined, and the latter's usage is to be preferred, on the score of accuracy. For an account of the *articular rete of the knee* as a whole see note <sup>227</sup> below.

<sup>226</sup> *Branches of the Femoral Artery in the Lower Part of Hunter's Canal* (Fig. 1034, p. 642).—The author's nomenclature of these differs from that usual in England. "The branches of the femoral artery for the region of the knee-joint often arise by a common trunk, the *arteria genu suprema*. This springs from the femoral artery just above the opening in the adductor magnus muscle, and runs down towards the capsule of the knee-joint in the substance of the vastus internus muscle near the common extensor tendon. It gives *rami musculares* to the vastus internus; a *ramus saphenus* which, descending beside the internal saphenus nerve, is distributed to the integument; and finally *rami articulares*, which contribute to the *rete articulare genu* [see note <sup>227</sup> below]. Often, however, the greater number of the *rami musculares* and the *ramus saphenus* are supplied by a separate branch of the femoral artery, which arises from that trunk somewhat higher up in Hunter's canal" (Von Langer and Toldt, *op. cit.*, pp. 526, 527). According to Quain's description, several *muscular branches* are supplied by the femoral artery in Hunter's canal, the lowermost of which, constant, and of considerable size (sometimes derived from the upper part of the popliteal artery), passes outwards across the back of the femur, perforating the short head of the biceps and the external intermuscular septum, to end in the crureus muscle. The *anastomotic artery* arises from the femoral a little above the opening in the adductor magnus,

and divides almost immediately into two branches (which are in many cases derived separately from the femoral trunk). The *superficial branch* runs down with the internal saphenus nerve; the *deep branch* courses along the front of the tendon of the adductor magnus muscle to the internal condyle of the femur. It supplies *articular branches* to the *rete articulare genu*. From these descriptions it will be apparent that the *anastomotic artery* is identical with the author's *arteria genu suprema*, and the *superficial branch* of that vessel with the author's *ramus saphenus*.

<sup>227</sup> *\*Rete Articulare Genu* (Ibid.).—The *\*articular rete of the knee* is an arterial network over the front and sides of the knee-joint. It consists of two layers: a *superficial*, with wide meshes and very minute constituent vessels, lying between the skin and the deep fascia; and a *deep*, with finer meshes and larger constituent vessels, actually in contact with the bones. The *patellar rete* is that portion of the network situate immediately in front of the patella, but the term is by English anatomists usually applied (inaccurately) to the network as a whole. The vessels supplying the rete are six in number, viz., the four lateral *articular branches* of the popliteal, the *anastomotic branch* of the femoral, and the *recurrent branch* of the anterior tibial artery.

<sup>228</sup> *Hunter's Canal* (Ibid.).—It is to be noted that the author uses the term *Hunter's canal* in a sense different from that attached to it by English anatomists. We find the following description in Von Langer and Toldt's "Anatomy," 7th ed., p. 263: "The *fossa iliopectinea* (*Scarpa's triangle*) . . . passes below into a groove, bounded internally by the adductor muscles and externally by the vastus internus muscle, and extending downwards along the long axis of these muscles. Already at the upper part of the middle third of the thigh, this groove is roofed by the sartorius muscle, and in addition, from about the middle of the thigh downwards, it is covered by a strong tendinous membrane, which stretches across from the commencement of the tendon of the adductor magnus muscle to the vastus internus muscle. Thus the groove is converted into a closed canal, *canalis adductorius Hunteri* (*Hunter's canal*)."

If this description leaves the point still undecided, the description of Fig. 1034 shows clearly that the fascial layer there figured covering the lower part of the femoral artery is the roof of Hunter's canal, the upper aperture of which is in the middle of the thigh. In England, however, the sartorius muscle is regarded as the roof of Hunter's canal, and that canal extends from the point at which the muscle comes to lie in front of the artery, i.e., the apex of Scarpa's triangle, to the opening in the adductor magnus muscle. And while it is true that the accessory fascial roof of Hunter's canal is thicker and stronger below than above the middle of the thigh, that fascial roof exists wherever the femoral artery is covered by the sartorius muscle, and the well-defined upper margin of the fascia shown in Fig. 1034 is the product of dissection.

<sup>229</sup> *Gluteal Artery* (Fig. 1038, p. 646).—By English anatomists this vessel is described as dividing just after it emerges from the pelvis into a *superficial*, smaller, part, and a *deep*, larger, part; the latter, again, divides into *superior* and *inferior branches*. In Toldt's nomenclature the superficial part is called the *muscular branch* to the gluteus maximus muscle; whilst it is the continuation of the trunk of the *arteria glutea superior* which divides into a *ramus superior* and a *ramus inferior*.

<sup>230</sup> *Trochanteric Rete and Crucial Anastomosis* (Ibid.).—The *anastomotic branch* of the sciatic artery (seen in Fig. 1038 running downwards and outwards along the lower border of the pyriformis muscle), the *ascending branch* of the first or *superior perforating artery*, the *transverse branch* of the *internal circumflex artery*, and



the *transverse branch of the external circumflex artery*, inosculate behind the great trochanter and in the digital fossa to form what is often called the *crucial anastomosis*. A lateral extension from this anastomosis, in the form of a network of fine vessels on the outer surface of the great trochanter, beneath the *gluteus maximus muscle*, constitutes the *trochanteric rete*.

<sup>221</sup> *Adductor Magnus Muscle* (Ibid.).—This is the posterior and inferior portion of the *adductor magnus muscle* as usually described by English anatomists, the anterior and superior portion of the same muscle being the *adductor minimus muscle* of Toldt. See note <sup>2</sup> to p. 345 in Part III. of this work.

<sup>212</sup> *Sural Arteries* (Fig. 1040, p. 648).—The *external and internal sural branches* of the *popliteal artery* are sometimes designated the *inferior muscular branches* (the *superior muscular branches* of the same trunk supplying the lower parts of the *adductor magnus* and *hamstring muscles*). The name *sural* is, however, preferable, as being more distinctive. The *cutaneous arteries of the calf*, long slender vessels, shown in Figs. 1040 and 1044, may arise, as in the specimen here figured, from the *sural arteries*; frequently, however, they are independent branches of the *popliteal artery*. They are often distinguished by the name of *superficial sural arteries*.

<sup>223</sup> *Medullary or Nutritious Arteries of the Femur* (Fig. 1041, p. 649).—According to Von Langer and Toldt (*op. cit.*, pp. 525, 526) the *arteria nutriticia femoris superior* is usually a branch of the *arteria perforans prima*, and the *arteria nutriticia femoris inferior* (larger than the former) is usually a branch of the *arteria perforans tertia*. Quain, in the osteological section of his work, figures two arterial foramina in the shaft of the femur, near the upper and the lower end, respectively, of the *linea aspera*, but in the *angiological section* he omits to mention the offset of the *first or superior perforating artery*, which enters the upper of these two foramina. The *principal medullary artery of the femur* (*arteria nutriticia femoris inferior* of Toldt) is, according to Quain (*op. cit.*, vol. ii., part ii., p. 491), derived either from the *second (middle)* or from the *third (inferior) perforating artery*. An additional medullary artery is, according to this author, frequently derived from the *fourth perforating artery* (the *terminal branch of the deep femoral or profunda artery*). According to Macalister, the chief nutrient artery of the femur is usually derived from the *second or middle perforating artery*.

<sup>224</sup> *Popliteal Canal* (Ibid.).—This name is not used by Quain or Macalister. It is applied by the author to the space beneath (anterior to) the *tendinous arch of the soleus muscle* through which the *posterior tibial vessels and nerve* pass from the *popliteal space* beneath the *soleus muscle*. See Fig. 612, p. 363, and Fig. 620, p. 371, in Part III. of this Atlas, and also note <sup>245</sup> below.

<sup>225</sup> *External Tarsal Artery* (Fig. 1042, p. 650).—This name is used by Macalister. Quain, on the other hand, who leaves the small *internal tarsal arteries* unnamed, calls this vessel the *tarsal artery* without further qualification. The name used in the text is to be preferred.

<sup>226</sup> *Malleolar Arteries* (Ibid.).—Both the *anterior external* and the *anterior internal malleolar arteries* are branches of the *anterior tibial artery*; the *posterior internal malleolar artery* is a branch of the *posterior tibial artery*; and the *posterior external malleolar artery* (an offset left unnamed by Quain) is derived from the *peroneal artery*.

<sup>227</sup> *Retia Malleolaria* (Ibid.).—The *external and internal malleolar retia* are connected in front with the *dorsal rete of the foot* (see note <sup>220</sup> below), and behind and below with the *calcaneal rete* (see note <sup>242</sup> below). The *external malleolar rete* is supplied by the two *external malleolar arteries* (*anterior and posterior*—see note <sup>226</sup> above), and by a branch of the *external tarsal artery*; the

*internal malleolar rete* is supplied by the two *internal malleolar arteries* (*anterior and posterior*—see note <sup>226</sup> above), and by branches of the *internal tarsal arteries*.

<sup>228</sup> *Fundiform Ligament of Retzius* (Ibid.).—This name is given to the undivided outer limb of the *anterior annular ligament* of the ankle, or *ligamentum lambdoideum* (see Fig. 614, p. 365, and Fig. 616, p. 367, and notes to same pages, in Part III. of this work).

<sup>229</sup> *The Dorsal Rete of the Foot and the Dorsal Interosseous Arteries* (Fig. 1043, p. 651).—The arrangement of the bloodvessels of the dorsum of the foot described as normal by Von Langer and Toldt in their "Anatomy" differs in some respects from that shown in Fig. 1043, which is, however, normal according to English anatomists. The German authors write (*op. cit.*, p. 530): "The *arteria tarsae lateralis* [*external tarsal artery*—see note <sup>215</sup> above] combines with direct branches of the *arteria dorsalis pedis* and with offsets of the *arteria tarsae mediales* [*internal tarsal arteries*] to form the extensive *rete dorsale pedis*, from which numerous offsets to the tarsal bones are derived. From the anterior extremity of the *dorsal rete of the foot* three *arteria metatarsae dorsales* [II.-IV., the *second, third, and fourth dorsal interosseous arteries*] proceed forwards. . . . These latter vessels are considerably reinforced by the *rami perforantes* [*posterior perforating arteries*] by means of which they are directly connected with the [*deep*] *plantar arch*; and in many instances the *second, third, and fourth dorsal interosseous arteries* are derived chiefly or exclusively from these *posterior perforating arteries*. In other cases, however, a vessel of considerable size arises from the outer side of the *dorsal artery of the foot*, known as the *arteria arcuata* [*metatarsal artery*], and arches forwards and outwards across the bases of the *metatarsal bones* to reach the outer border of the foot, receiving on the posterior or concave side of the arch numerous offsets from the *dorsal rete of the foot*, and supplying from the anterior or convex side of the arch the *second, third, and fourth dorsal interosseous arteries*. . . . The *first dorsal interosseous artery* is the direct continuation of the *dorsalis pedis artery*; and this vessel supplies not only the *collateral dorsal digital arteries* for the adjoining sides of the great and second toes, but also the *dorsal digital artery* for the inner side of the former."

<sup>230</sup> *Termination of Dorsalis Pedis Artery* (Ibid.).—The *dorsal artery of the foot* terminates by dividing into two vessels of unequal size. The smaller terminal branch, which is continued in the same direction as the parent trunk, is the *first dorsal interosseous artery* in Quain's nomenclature, but Macalister calls it the *dorsalis hallucis*. (Regarding the distribution of this vessel see the end of note <sup>220</sup> above.) The larger terminal branch, usually known as the *communicating branch to the deep plantar arch*, passes between the heads of the *first dorsal interosseous muscle*, communicates with the *external plantar artery* to complete the *deep plantar arch*, and provides the *plantar digital vessels* for both sides of the great toe and for the inner side of the second toe; for this reason Quain gives the alternative name of *plantar digital branch* to this vessel. Inasmuch, however, as it is in series with the other posterior perforating arteries, and is serially homologous with the perforating portion of the radial artery in the upper limb, the name of *first posterior perforating artery* would be more accurately descriptive than any other. Macalister, to conclude, calls it the *first interosseous perforating artery*.

<sup>241</sup> *Perforating Arteries* (Ibid.).—According to the English nomenclature, there are two sets of these vessels—*anterior* and *posterior*. The latter, to which alone the name of *rami perforantes* is given by the author, larger in size and more constant than the former, are offsets of the *deep plantar arch*, and are described in

notes <sup>230</sup> and <sup>240</sup> above. The *anterior perforating arteries* are small and inconstant vessels connecting the anterior extremities of the *dorsal interosseous arteries* with the *plantar digital arteries* adjacent to the terminal bifurcation of these vessels. The author calls them *rami anastomotici arteriarum metatarsarum dorsaliu cum arteriis digitalibus plantaribus*.

<sup>242</sup> *Calcaneal Rete* (Fig. 1044, p. 652).—The arterial network over the back and the under surface of the heel communicates above with the *external* and *internal malleolar retia* (see note <sup>237</sup> above), and in front with the *plantar rete* (see note <sup>243</sup> below). It is supplied by the *external* and the *internal calcaneal branches*, the former being derived from the *peroneal artery*, and the latter from the *posterior tibial artery* (Von Langer and Toldt), from the *external plantar artery* (Quain), or from both these vessels (Macalister).

<sup>243</sup> *Plantar Rete* (Ibid.).—The fine-meshed arterial subcutaneous network over the sole of the foot communicates freely with the *calcaneal* and *malleolar retia* and with the *dorsal rete of the foot*, and in addition to the blood received from these sources is reinforced by numerous unnamed cutaneous offsets of the branches of the plantar arteries, which reach the rete by perforating the plantar fascia.

<sup>244</sup> (Fig. 1045, p. 653.) The fascia covering the popliteus muscle is reinforced by, and, indeed, to a large extent derived from, a downward expansion of the tendon of insertion of the semimembranosus muscle.

<sup>245</sup> *Lower Limit of the Popliteal Artery* (Ibid.).—There is some inconsistency in the account given both by Quain and by Macalister of the lower limit and point of division of the popliteal artery. According to the former author, "the popliteal artery . . . reaches from the opening in the adductor magnus to the lower border of the popliteus muscle, where it divides into the anterior and posterior tibial arteries." But in describing the relations of the artery Quain states that "its termination is beneath the upper margin of the soleus muscle" (*op. cit.*, vol. ii., part ii., p. 493). Macalister also states that the artery divides "at the lower border of the popliteus muscle" (*op. cit.*, p. 499); and a few pages later, in describing the termination of the artery, he tells us that it is exposed by removing the *gastrocnemius* and the *soleus* muscles (p. 509). Now, these statements are irreconcilable, for the *popliteal* or *oblique line* of the tibia (see Fig. 334, p. 136, in Part I.), which gives origin to the soleus muscle, at the same time marks the lower limit of the insertion of the popliteus muscle. Hence these muscles do not overlap, as is well shown by Fig. 612, p. 363, in Part III., and if the popliteal artery really divided at the lower border of the popliteus muscle, the soleus muscle could not possibly lie behind its termination. The description given by Von Langer and Toldt of the ending of this artery is at once more accurate and more consistent than that of the English anatomists just quoted. The German authors ("Anatomy," 7th ed., p. 527) describe the vessel as passing down behind the popliteus muscle to enter what they call the *\*popliteal canal* (see note <sup>244</sup> above)—i.e., the space beneath (anterior to) the *tendinous arch of the soleus muscle*, and immediately thereafter dividing into anterior and posterior tibial arteries (see also note <sup>249</sup> below). The entrance to the *\*popliteal canal* is also shown in Fig. 612. In not a few instances, indeed, the popliteal artery divides, as described by Quain and Macalister, at the lower border of the popliteus muscle, and in such cases, as stated in note <sup>3</sup> to p. 363, Part III., it is the *posterior tibial* vessels and nerve that enter the *\*popliteal canal*; but this high division of the artery precludes the possibility of its termination lying beneath the upper part of the soleus muscle.

<sup>246</sup> *Soleus Muscle* (Fig. 1046, p. 654).—It is somewhat inconsistent of the author to speak of the *tibial head (caput)* and the *fibular head* of the soleus muscle, inasmuch as he gives the name of *triceps sura* to the *gastrocnemius* and *soleus*, considered as a single three-headed muscle (see Figs. 617 and 618, pp. 368 and 369, in Part III.), of which two heads, the inner and outer head of the *gastrocnemius*, are superficial and attached to the femur, whilst the third head, the *soleus*, is deep, and attached to the bones of the leg. Moreover, the fibres from the fibula, those from the tendinous arch, and those from the tibia, form a continuous muscular mass, which is not separable into distinct heads (see Fig. 612, p. 363, in Part III.). Quain, however, falls into the same error when he writes: "The *tibial head* of the soleus is almost peculiar to man: among the lower animals it occurs, of small size, only in the gorilla, and sometimes in the chimpanzee" (*op. cit.*, vol. ii., part ii., p. 264). It should, of course, read "the *tibial origin* of the soleus," etc.

<sup>247</sup> *Communicating Branches between Posterior Tibial and Peroneal Arteries* (Ibid.).—Quain writes (*op. cit.*, vol. ii., part ii., pp. 496, 497): "A communicating branch passes transversely beneath the flexor longus hallucis muscle, between the posterior tibial and peroneal arteries, about an inch above the ankle-joint. A second loop of communication between these vessels is sometimes present, lying in the fat beneath the tendo Achillis." It is this second loop which is seen in Fig. 1046, just above the severed extremity of the tendo Achillis; and in Fig. 1047, in addition to both the vessels above described, we see a large communicating branch two or three inches above the ankle-joint. In Von Langer and Toldt's "Anatomy" (7th ed., p. 528) the principal communicating branch between these vessels is called *ramus anastomoticus*.

<sup>248</sup> *\*Fibular Branch of the Anterior Tibial Artery* (Fig. 1047, p. 655).—Quain and Macalister agree in calling this small vessel the *superior fibular branch*; but as there is no *inferior fibular branch*, the name used in the text is to be preferred.

<sup>249</sup> *Division of the Popliteal Artery* (Ibid.).—As explained in note <sup>245</sup> above, Von Langer and Toldt describe the popliteal artery as entering the *\*popliteal canal*, and "immediately thereafter dividing into anterior and posterior tibial arteries." It is necessary to add that the German authors regard the *anterior tibial artery* as a branch of the *popliteal artery*, which latter vessel, in their view, terminates nearly an inch below the origin of the anterior tibial by division into the *posterior tibial* and *peroneal arteries*. According to the description usually given by English anatomists, on the other hand, the terminal branches of the *popliteal artery* are the *anterior* and *posterior tibial arteries*, while the *peroneal artery* is regarded as a branch of the *posterior tibial artery*. The difference is solely one of terminology.—I may, in conclusion, mention an actual but somewhat rare variety in which the popliteal artery divides into three terminal branches: the anterior tibial, posterior tibial, and peroneal arteries.

<sup>250</sup> *Branches of Internal Plantar Artery* (Fig. 1048, p. 656).—According to Von Langer and Toldt (*op. cit.*, p. 529), this vessel divides into a *ramus superficialis* (*superficial branch*) which supplies the abductor hallucis muscle, and a *ramus profundus* (*deep branch*) which sinks deeply into the inner plantar furrow (the interval between the abductor of the great toe and the short flexor of the toes). Quain (*op. cit.*, vol. ii., part ii., p. 498) enumerates the branches of the internal plantar artery as follows: (a) Small communicating branches to the digital arteries of the three inner clefts; (b) muscular branches; (c) cutaneous branches in the inner plantar furrow; (d) cutaneous branches to the inner border of the foot; (e) deep offsets to the bones and joints of the foot;



and, finally, (f) the internal plantar artery terminates opposite the head of the first metatarsal bone by joining the digital artery to the inner side of the great toe. According to Macalister (*op. cit.*, p. 515), one of the branches of the internal plantar artery, which accompanies and overlies the internal plantar nerve, "may join the superficial branch of the external plantar artery to form a *superficial plantar arch*. This, however, is seldom large enough to admit coarse injection."

<sup>251</sup> *Plantar Digital Arteries* (Ibid.).—The four arteries passing from the (deep) plantar arch to the four clefts between the toes, where they divide into the *collateral digital arteries*, "are called, on account of their course in the interosseous spaces of the metatarsus, *arteriæ metatarsæ plantares* [*plantar metatarsal arteries*]" (Von Langer and Toldt, *op. cit.*, p. 529). In England, however, these vessels are known simply as (*plantar*) *digital arteries*; sometimes, however, to distinguish them from the *collateral digital arteries* into which they divide, the digital trunks before division are known as the *common digital arteries*. (Cf. note <sup>213</sup>, on the nomenclature of the digital arteries of the hand.)

<sup>252</sup> *Fascia Ilipectinea* (Fig. 1050, p. 658).—The exact significance of this term as used by the author is explained in note <sup>1</sup> to p. 390, in Part III. Here we see it forming the posterior layer of the femoral or crural sheath.

<sup>253</sup> (Ibid.) Or *pubic portion of the fascia lata*; this is continuous above and externally with the fascial layer called by the author *fascia ilipectinea* (see note <sup>252</sup> above, also the description at the foot of Fig. 598, p. 349, in Part III).

<sup>254</sup> *Nervus Tibialis* (Figs. 1054, 1055, p. 660).—In the author's nomenclature, the name *nervus tibialis* is given to the larger of the two terminal branches of the *great sciatic nerve* from the point of division of the parent trunk until the *\*tibial nerve* itself divides (usually just below the internal annular ligament of the ankle) into the *internal* and *external plantar nerves*; in England, however, the upper part of this nerve, as far as the lower border of the popliteus muscle, is known as the *internal popliteal nerve*, and for the rest of its course it receives the name of *posterior tibial nerve*.

<sup>255</sup> *\*Dorsal Interosseous Fascia* (Fig. 1056, p. 660).—"In connexion with the extensor brevis digitorum muscle, we find a well-developed *deep layer of the deep fascia of the dorsum of the foot*, known as the *fascia interossea dorsalis*, which forms a covering for the muscle and for the dorsal artery of the foot, and is connected above with the deep layer of the anterior annular ligament of the ankle" (Von Langer and Toldt, *op. cit.*, p. 267). Quain says merely: "The *fascia of the dorsum of the foot* is reduced to a thin membrane prolonged from the anterior annular ligament over the extensor tendons. Beneath it, deeper layers of fascia are placed over the short extensor of the toes and the interosseous muscles" (*op. cit.*, vol. ii., part ii., p. 263).

<sup>256</sup> *\*Plantar Interosseous Fascia* (Ibid.).—"In the region of the metatarsus, the principal branch of the external plantar artery runs between the second and the third layer of muscles, covered by the easily demonstrated *fascia interossea plantaris*, which separates the interosseous muscles from the adductor hallucis" (Von Langer and Toldt, *op. cit.*, p. 268). Reference to Part III. of this Atlas, Fig. 627, p. 378, and Fig. 628, p. 379, will show that the deep part of the external plantar artery and the fascial layer in question is between the *third* and *fourth* layers of the muscles of the sole as there enumerated, and not between the second and third, a different system of grouping being adopted. The *\*plantar interosseous fascia* is not described by Quain or Macalister, except vaguely, as "fascia covering the interosseous muscles."

<sup>257</sup> *\*Deep Layer of the Deep Fascia of the Sole* (Ibid.).—No account of the *\*fascia plantaris profunda* is to be found even in Von Langer and Toldt's "Anatomy." Examination of Fig. 1055 shows it to lie between the second and third layers of the muscles of the sole, and that it is, in fact, the layer of areolar tissue covering the adductor obliquus hallucis muscle.

<sup>258</sup> *Presacral Venous Plexus* (Fig. 1057, p. 662).—"The *lateral sacral veins* form, by their communications with one another and with the *middle sacral veins*, a plexus over the anterior surface of the sacrum. They receive branches from the sacral canal through the anterior sacral foramina, and open at two or three points into the internal iliac veins" (Quain, *op. cit.*, vol. ii., part ii., p. 540). The *middle sacral veins* unite (in most cases) to form a common trunk, which usually enters the left common iliac vein. The name I have selected as the most suitable English equivalent for the author's *plexus sacralis anterior* is used by Macalister. The plexus communicates in front with the hæmorrhoidal (or rectal) venous plexus, and behind with the anterior internal vertebral venous plexus (see note <sup>257</sup> below).

<sup>259</sup> *Venous Plexuses of the Vertebral Column* (Figs. 1061, 1062, p. 665).—Neither Quain nor Macalister employs a complete series of English terms corresponding to those used by Toldt in his description of the venous plexuses of the vertebral column. Quain, in his account of the veins of the spine, mentions the plexuses connected with these veins, but gives them no distinctive names. I have, therefore, given in the text the literal English equivalents of the Latin terms used by the author, except that I use the word *plexus* in the singular where he uses it in the plural. The *\*posterior external vertebral plexus* (see note <sup>263</sup> below), for instance, is, as Macalister says, "longitudinally continuous from the sacrum to the skull," and the same is true of the other *vertebral plexuses*. The author, however, regards the *internal vertebral venous plexuses* as made up of a chain of connected segmental plexuses (see note <sup>262</sup> below). Alternative names for some of the vertebral plexuses are given in the notes in the usual manner.

<sup>260</sup> *\*Posterior External Vertebral Venous Plexus* (Ibid.).—Macalister calls this the *plexus dorsalis* (of the vertebral column). According to Quain (*op. cit.*, vol. ii., part ii., pp. 532, 533), "the *dorsal spinal veins* are derived from the muscles and integument of the back, and form a plexus over the arches of the vertebræ." In another place in the same volume (p. 531) he calls it the *dorsal spinal plexus*. See also note <sup>259</sup> above.

<sup>261</sup> *The Condylar Emissary Vein, and the Venous Rete of the Anterior Condylar Foramen* (Fig. 1063, p. 666).—The *condylar emissary vein* passes from the lateral (sigmoid) sinus through the *posterior condylar foramen* to the beginning of the vertebral vein. It is distinguished by Macalister as the *posterior condyloid vein* from what this author calls the *anterior condyloid vein*. The latter is described by Quain (who does not, however, employ the name just given) as a venous ring surrounding the hypoglossal nerve in the *anterior condylar foramen*, which communicates internally with the occipital sinus and the intraspinal veins, externally with the vertebral veins and the plexus on the front of the spine (*i.e.*, the *\*anterior external vertebral plexus* of Toldt—see Fig. 1066, p. 669). The so-called *anterior condyloid vein* is shown in Fig. 1080, p. 685, under the name of *\*venous rete of the anterior condylar foramen*. Von Langer and Toldt describe it as follows: "The emissary veins from the venous ring surrounding the foramen magnum pass outwards through the anterior condylar foramina and, with their tributaries, form a network around the hypoglossal nerves, and are known as *retia canalis hypoglossi*" (*op. cit.*, p. 541).

<sup>262</sup> (Ibid.) Concerning the author's application of the term *arteria transversa colli* (transverse cervical artery), see Appendix, notes <sup>134</sup>, <sup>135</sup>, <sup>172</sup> and <sup>208</sup>; similar considerations apply to the use of the term *vena transversa colli* (transverse cervical vein). Macalister gives *posterior scapular* as an alternative name for these vessels.

<sup>263</sup> \**Posterior Internal Vertebral Venous Plexus* (Fig. 1064, p. 667).—"Within the spinal canal and on the back of the theca vertebralis there is a close plexus of veins, the *postero-internal plexus*, whose main trunks are longitudinal on the inside of the articular masses" (Macalister, *op. cit.*, p. 260). "The *posterior longitudinal spinal veins* . . . two in number . . . are often much broken up in parts of their course, and they communicate with one another by numerous cross-branches on the anterior surface of the arches of the vertebrae" (Quain, *op. cit.*, vol. ii., part ii., p. 533). Here we have two different modes of regarding the same anatomical data. See also note <sup>278</sup> above.

<sup>264</sup> *Lateral and Sigmoid Sinuses* (Ibid.).—The common English usage is to extend the meaning of the term *lateral sinus* so as to include that sinus which (following Macalister as well as Toldt) is here distinguished as the *sigmoid sinus*. Thus, according to Quain and the majority of English anatomists, the *lateral sinus* extends from the internal occipital protuberance to the jugular foramen. In this work, however, it is regarded as extending from the internal occipital protuberance to the point where the channel for the sinus passes from the cerebral surface of the parietal to the cerebral surface of the temporal bone. At this point the lateral sinuses "in their archaic foetal condition communicated through the post-gleroid foramen with the primitive external jugular vein, but this connexion early diminishes, and is ultimately represented only in rudiment by the mastoid vein; an original small channel of communication from the lateral sinus to the posterior lacerate foramen becomes commensurately dilated, and appears in the adult as its continuation, the *sigmoid sinus*" (Macalister, *op. cit.*, p. 533).

<sup>265</sup> \**Venous Rete of the Intervertebral Foramen* (Ibid.).—Writing of the *posterior longitudinal spinal veins* and the \**posterior internal vertebral venous plexus* (see note <sup>263</sup> above), Quain states (*op. cit.*, vol. ii., part ii., p. 533): "From the plexus . . . offsets pass outwards to the intervertebral foramina, where they join the similar branches given off by the anterior longitudinal veins, and form a plexus around the issuing nerve;" but this author does not make use of the name given above. Macalister merely says that through each intervertebral foramen there emerges an outflowing *ramus spinalis* [i.e., the \**intervertebral vein*] to join the *plexus dorsalis* [i.e., the \**posterior external vertebral venous plexus*—see note <sup>260</sup> above].

<sup>266</sup> *Torcular Herophili, or Confluence of the Sinuses* (Ibid.).—Properly this name should be applied only to a somewhat rare arrangement of the sinuses, when a true *confluens sinuum* is exhibited at the common meeting-point of the superior longitudinal sinus, the straight sinus, the occipital sinus, and the right and left lateral sinuses. The usual arrangement is for the superior longitudinal sinus to be continued into the right lateral sinus, a dilatation marking the angle of union, this dilatation receiving the occipital sinus, and being conventionally called the *torcular Herophili*; the straight sinus turns to the left into the left lateral sinus, and the right and left lateral sinuses are commonly connected at their origin by a larger or smaller communicating vein. Sometimes this arrangement is reversed, the superior longitudinal sinus being continued into the left, the straight sinus into the right lateral sinus. (See Fig. 1234, p. 804, in Part VI.) The lateral sinus that receives the superior

longitudinal sinus is larger than that which receives the straight sinus. Something approaching a true *confluence of the sinuses* is seen in Fig. 1064, in which the superior longitudinal sinus divides, a larger right division being continuous with the right lateral sinus, and a smaller left division being continuous with the left lateral sinus. The termination of the straight sinus in this specimen is not apparent in the figure, but the occipital sinus passes to the commencement of the right lateral sinus.

<sup>267</sup> \**Anterior Internal Vertebral Venous Plexus* (Fig. 1065, p. 668).—The *postero-internal plexus*, says Macalister (*op. cit.*, p. 260), is connected by transverse branches "with the still larger *antero-internal plexus*, which lies on the backs of the bodies of the vertebrae. The main stems of this latter are two long veins which pass from end to end of the vertebral canal on the roots of the pedicles of the vertebrae. Across the back of every body these are joined by a cross-branch. Each of these anterior transverse branches receives the *basi-vertebral vein* from the cancelli of the vertebral body." Quain gives no name to this plexus, but states (*op. cit.*, vol. ii., part ii., p. 533) that "the *anterior longitudinal spinal veins* are two large plexiform vessels which extend the whole length of the spinal canal, lying behind the bodies of the vertebrae, one along each edge of the posterior common ligament." Young (U.S.) calls this plexus the *anterior intraspinal plexus*. (See also note <sup>260</sup> above.)

<sup>268</sup> *Basi-vertebral Veins* (Ibid.).—Quain calls these veins the *internal veins of the bodies of the vertebrae*, which is cumbersome. The name *basi-vertebral veins* is current, and sufficiently distinctive. Young (U.S.) calls them *vena basis vertebrarum*, of which the name used in the text is a convenient modification. For their connexion with the \**anterior internal vertebral plexus*, see note <sup>267</sup> above.

<sup>269</sup> \**Venous Retia of the Vertebrae* (Ibid.).—"The *plexus venosi vertebrales interni* are mainly constituted by individual circularly-disposed extrathecal networks, the *retia venosa vertebrarum*, which, in each vertebra, are attached in front to the posterior surface of the vertebral body, and are in apposition behind with the neural arch. There are, therefore, as many vertebral venous retia as there are vertebrae in the spinal column. Their series is completed above by a plexiform vascular ring surrounding the foramen magnum" (see notes <sup>260</sup> and <sup>231</sup> above).—Von Langer and Toldt, *op. cit.*, p. 540.

<sup>270</sup> \**Venous Plexus of the Nipple* (*Circulus Venosus of Haller*) (Fig. 1068, p. 671).—Von Langer and Toldt, after stating that the veins of the breast correspond in distribution and nomenclature with the arteries of that organ, write (*op. cit.*, p. 411): "Noteworthy is the *plexus venosus mamilla* in the region of the areola, which is nothing more than a ring-shaped anastomotic chain of small subcutaneous veins surrounding the nipple (mamilla)." The term \**venous plexus of the nipple* is not used by Quain or Macalister, but the former authority remarks (*op. cit.*, vol. iii., part iv., p. 290) that "Haller described a sort of anastomotic venous circle surrounding the base of the nipple as the *circulus venosus*"; and the latter, describing the blood-supply of the breast, writes (*op. cit.*, p. 264): "Some of the veins are deep, and accompany the arteries; others form a superficial circle of anastomosis in the areola, and end in the superior thoracic vein."

<sup>271</sup> \**Costo-axillary and Thoracico-epigastric Veins* (Ibid.).—"Of considerable importance are the anastomotic connexions between the axillary vein and the intercostal veins, on the one hand, and between the axillary vein and the subcutaneous venous network of the anterior abdominal wall, on the other. The former is affected by a number of venous radicles, known as the \**vena*



*costo-axillares*, which arise in the region of distribution of the seven uppermost intercostal veins, and open by a common trunk into the axillary vein. The second series of communications takes place by means of the \**vena thoraco-epigastrica*; these arise in the region of distribution of the superficial epigastric vein or are directly continuous with the branches of this vein and run on each side of the trunk directly upwards to the axilla, where they open into the axillary vein, sometimes by an independent trunk, sometimes by joining the long thoracic vein. Since the superficial epigastric vein is a tributary of the femoral vein, this elongated anastomosis affords a direct channel of communication between the axillary vein and the femoral vein" (Von Langer and Toldt, *op. cit.*, p. 547).

<sup>272</sup> *External Pudic Arteries and Veins* (Ibid.).—These are two in number, *superior* and *inferior*. Both the veins are seen in Fig. 1068; but of the arteries, the *superior* only is visible, the *inferior* being beneath the fascia lata. For the names given to these vessels by Macalister, see note <sup>6</sup> to p. 599.

<sup>273</sup> *Venous Circle of the Umbilicus and Para-umbilical Veins* (Ibid.).—The \**venous circle of the umbilicus*, which is not described by Quain or by Macalister, is an anastomotic chain of small subcutaneous veins surrounding the navel, similar to the *circulus venosus* of Haller surrounding the nipple (see note <sup>270</sup> above). The *para-umbilical veins*, in the peritoneum adjacent to the umbilicus and to the round ligament of the liver, form one group of the *accessory portal veins* described by Sappey; it is the communications they form with the \**venous circle of the umbilicus* that are indicated in Fig. 1068. In obstruction of the portal circulation, this group of communicating veins forms one of the principal channels of collateral circulation, and it is their enlargement that constitutes the pathological condition known clinically as *caput medusæ*.

<sup>274</sup> *Subcutaneous Dorsal Veins of the Penis* (Ibid.).—As seen in Fig. 1068, these vessels are tributaries of the *external pudic veins* (see note <sup>272</sup> above). They must be carefully distinguished from the *dorsal vein of the penis* proper (see Fig. 1069, p. 672, and Fig. 1070, p. 673), which enters the pelvis and terminates in the *prostatic venous plexus*. See also note <sup>275</sup> below.

<sup>275</sup> *Vesical, Prostatic, and \*Pudendal Venous Plexuses* (Fig. 1069, p. 672).—The *vesical venous plexus* consists of veins which ramify over the whole surface of the bladder external to its muscular coat; they are larger and more numerous round the base of the organ, receiving here veins from the ureters, the *vasa deferentia*, and the *vesiculæ seminales*, and communicating freely with the *prostatic* and *hæmorrhoidal* plexuses. The *prostatic venous plexus*, which is formed largely by the breaking up of the *dorsal vein of the penis*, ramifies between the two layers of the *pelvi-prostatic capsule* (see Appendix to Part IV., note <sup>74</sup>). Its connexion with the *vesical plexus* is so intimate that Macalister describes the two under a joint name as the *prostaticovesical plexus* (*op. cit.*, p. 428). In the female, the place of the *prostatic plexus* is taken by a plexus surrounding the upper part of the urethra and receiving the *dorsal vein of the clitoris*; the *vaginal plexus* also communicates freely with the *vesical plexus* in front and the *hæmorrhoidal plexus* behind. Thus, the \**pudendal venous plexus* of Toldt (the term is little used in England) is made up in the male of veins regarded by English anatomists as belonging to the *prostatic* and *vesical plexus*; and in the female, of veins belonging to the *peri-urethral*, *vesical*, *vaginal*, and *uterine plexuses*. See Appendix to Part IV., note <sup>103</sup>.

<sup>276</sup> (Fig. 1070, p. 673.) The *obturator fascia* (*parietal layer of the pelvic fascia*) has here split to form the channel for the internal pudic vessels, known as Alcock's canal. See Appendix, note <sup>145</sup>.

<sup>277</sup> *Spermatic Vein* (Ibid.).—This is called by the author *vena spermatica interna* to distinguish it from the *vena spermatica externa*—the *cremasteric vein* of English anatomists. As a synonym for *vena spermatica interna*, the author employs the name *vena testicularis* in the male, and *vena ovarica* in the female.

<sup>278</sup> (Ibid.) An account of the anomalous origin of the *obturator artery* from the *deep* or *inferior epigastric artery* is given in note <sup>1</sup> to p. 388, in Part III. of this work.

<sup>279</sup> \**Subcutaneous Venous Plexus of the Anus* (Fig. 1072, p. 675).—This name is not used by Quain or Macalister, but the latter authority speaks of the veins under consideration as "the system of *anal (proctodeal) veins*." The plexus consists of the terminal ramification of the branches of the *inferior* or *external hæmorrhoidal veins* (also called the *anal veins*, see note <sup>150</sup> above), and communicates freely within the anal canal with the *hæmorrhoidal* or *rectal venous plexus* (see Fig. 1073, p. 676), of which, indeed, the *anal venous plexus* is considered by English anatomists to form the lowest part.

<sup>280</sup> (Fig. 1073, p. 676.) English anatomists commonly include in the *hæmorrhoidal* or *rectal venous plexus* that which the author separately describes as the *subcutaneous venous plexus of the anus*. See Fig. 1072, p. 675, and note <sup>279</sup> above.

<sup>281</sup> *Uterovaginal Venous Plexus* (Ibid.).—English anatomists usually speak of separate *uterine* and *vaginal* venous plexuses. These plexuses, of course, communicate somewhat freely; but on the whole the venous blood from the body of the uterus passes by means of the *uterine plexus* to the *ovarian* or *pampiniform venous plexus* and the *inferior vena cava*, that from the neck of the uterus and from the vagina by means of the *vaginal plexus* to the *internal iliac vein*.

<sup>282</sup> \**Nasofrontal Vein* (Fig. 1077, p. 682).—This name, which is not employed by Quain or by Macalister, is given by the author to the anterior extremity of the *superior ophthalmic vein*, which communicates with the *angular vein*.

<sup>283</sup> *Anterior, Posterior, and Common Facial Veins* (Ibid.).—It will be noticed that the author's name for the *facial vein* of English anatomists is *vena facialis anterior*, and the name *anterior facial vein* is occasionally used in England also to distinguish this vein from that which is sometimes called the *posterior facial vein* (*vena facialis posterior* of the author), but which is better known as the *temporomaxillary vein* (see Fig. 1077, p. 682). This latter is a short trunk, not infrequently plexiform, formed opposite the neck of the lower jaw by the union of the *temporal* and the *internal maxillary veins*. Near the angle of the jaw the *temporomaxillary vein* divides into two parts. The *anterior division* joins the *facial vein* to form a short trunk, the *vena facialis communis* of the author, sometimes known in England also as the *common facial vein* (see Fig. 1077); this opens into the *internal jugular vein* about the level of the hyoid bone. The *posterior division* of the *temporomaxillary vein* (called by Macalister the *communicating branch* from the *temporomaxillary* to the *external jugular vein*) unites with the *posterior auricular vein* to form the *external jugular vein*. (The arrangement shown in Fig. 1077 does not correspond fully to the above description, which is, however, that generally accepted as normal.)

<sup>284</sup> \**Deltoid Veins* (Ibid.).—No English equivalent of the term *venæ deltoideæ*, used in Fig. 1077, is to be found in the works of Quain or Macalister. Examination of the figure shows that one of the veins thus denoted is the companion vein of one of the thoracic or pectoral branches of the *acromiothoracic artery*, while the other is a tributary of the *cephalic vein*.

<sup>285</sup> (Ibid.) Regarding the author's use of the term *superficial cervical artery*, see Appendix, notes <sup>134</sup>, <sup>135</sup>, <sup>172</sup>, and <sup>208</sup>. The same

considerations apply to his use of the term *superficial cervical vein*.

<sup>226</sup> *Ranine Vein* (Fig. 1078, p. 683).—"The lingual artery is accompanied by two small *venæ comites*, but the largest vein of the tongue is the *ranine*, which lies external to the artery of the same name, and, after being joined by *sublingual branches*, passes backwards over the hyoglossus muscle with the hypoglossal nerve. These veins end in the internal jugular" (Ellis, "Demonstrations of Anatomy," 10th ed., p. 97). The *ranine vein*, called by the author, from its course adjacent to the hypoglossal nerve, *vena comitans nervi hypoglossi*, thus returns the greater part of the blood carried to the tongue by the *lingual artery* and its continuation the *ranine artery* (called by the author *arteria profunda linguæ*); but the vein and the nerve lie superficial to, while the artery lies beneath, the hyoglossus muscle.

<sup>227</sup> *Veins of the Temporomandibular Articulation* (Ibid.).—Among the tributaries of the *temporal vein*, Quain mentions "branches from a plexus which surrounds the articulation of the lower jaw, and into which one or two small veins issuing from the tympanum by the fissure of Glaser pour their contents," but he does not give these vessels any distinctive name.

<sup>228</sup> *\*Submaxillary Fossa* (Fig. 1079, p. 684).—The name of *fossa submaxillaris* is given by the author to the space between the superficial and deep layers of the deep cervical fascia, in which the submaxillary gland lies, bounded above by the lower margin of the mandible, below by the anterior belly of the digastric muscle, and behind by the stylomaxillary ligament. In Quain's terminology this region is the *submaxillary triangle*; in Macalister's, it is the *anterior half of the digastric space*.

<sup>229</sup> *Supraclavicular Fossæ* (Ibid.).—In the terminology of English anatomists there is one *supraclavicular fossa* only, viz., the lower part of the posterior triangle of the neck. This, however, is called by the author *\*fossa supraclavicularis major*, the *\*greater supraclavicular fossa*; while he gives the name of *\*fossa supraclavicularis minor*, the *\*lesser supraclavicular fossa*, to the depression above the sternal extremity of the clavicle which corresponds to the interspace between the two heads of the sternocleidomastoid muscle.

<sup>230</sup> *Basilar Venous Plexus or Basilar Sinus* (Fig. 1080, p. 685).—This is sometimes also called the *transverse sinus*, but the name is better avoided, since the occipital portion of the *lateral sinus* is known in the Continental nomenclature as *sinus transversus* (see note <sup>264</sup> above). According to Von Langer and Toldt, the *basilar venous plexus* is to be regarded as an upward extension of the *\*anterior internal vertebral venous plexus* (see note <sup>267</sup> above), with which it communicates through the foramen magnum. On each side it opens into the *inferior petrosal sinus*. The *basilar venous plexus* must be carefully distinguished from the *basilar* or *basal vein*, *vena basalis* (Rosenthal). See Fig. 1086, p. 691, and note <sup>297</sup> below.

<sup>231</sup> *Rete Canalis Hypoglossi and Emissarium Canalis Hypoglossi* (Ibid.).—According to Quain (*op. cit.*, vol. ii., part ii., p. 526), "A venous ring surrounds the hypoglossal nerve in the anterior condylar foramen, and communicates internally with the occipital sinus and intraspinal veins, externally with the vertebral vein and the plexus on the front of the spine." Von Langer and Toldt describe as normal the existence of a venous network round the hypoglossal nerve, known as the *\*venous rete of the anterior condylar foramen*, and shown in the right side of Fig. 1080; a variety is the existence of a single, comparatively large, emissary vein in this situation, the *\*emissary vein of the anterior condylar foramen* (called by Macalister the *anterior condyloid vein*), shown in the left side of Fig. 1080. See also note <sup>221</sup> above.

<sup>232</sup> *\*Venous Rete of the Foramen Ovale* (Fig. 1082, p. 687).—This name is not used by Quain or Macalister, but the former, in his description of the emissary veins, writes (vol. ii., part ii., p. 526): "One or two considerable veins descend from the cavernous sinus through the foramen ovale, as well as small ones through the fibrous tissue in the foramen lacerum, to the pterygoid and pharyngeal plexuses. There is frequently another vein passing through the foramen of Vesalius."

<sup>233</sup> *Lacunæ Laterales* (Fig. 1083, p. 688).—"Communicating with the superior longitudinal sinus from its anterior end as far back as the beginning of the occipital region are a number of diverticula, from 0.5 to 3 cm. long, which form a series of venous lacunæ (*lacunæ laterales* of Key and Retzius) receiving the independent meningeal veins, and some veins from the diplœe, and are invaginated by Pacchionian granulations. These venous lacunæ are not entirely confined to the region of the superior sinus, but some may occur in the neighbourhood of other sinuses, especially the lateral and straight sinus" (Quain, *op. cit.*, vol. iii., part i., p. 184).

<sup>234</sup> (Fig. 1084, p. 689.) The *superior thyroid vein* sometimes opens directly into the *internal jugular vein*, sometimes, as in the specimen shown in Fig. 1084, into the *common facial vein*. Regarding the last-named vein, see note <sup>283</sup> above.

<sup>235</sup> *Palatine Veins* (Ibid.).—Quain describes two palatine veins, a *superior palatine vein*, which enters the *pterygoid venous plexus*, and an *inferior palatine vein*, which returns the blood from a plexus surrounding the tonsil and from the soft palate, runs downwards beside the pharynx, and opens usually into the *facial vein* near to its proximal extremity. The *inferior palatine vein* of Quain is the vein called *vena palatina* in the author's terminology. The *sphenopalatine vein* (the companion vein of the nasal or sphenopalatine artery), like the superior palatine vein, joins the pterygoid venous plexus.

<sup>236</sup> *Arachnoidal Villi or Pacchionian Bodies* (Fig. 1085, p. 690).—The nature of these bodies having long remained uncertain, they are variously known as *Pacchionian bodies* (*corpora Pacchionii*), *Pacchionian glands* (*glandulæ Pacchionii*), and *Pacchionian granulations* (*granulationes Pacchionii*); Luschka, however, has shown conclusively that they are really enlarged *arachnoidal villi*.

<sup>237</sup> *Basilar or Basal Vein (Vena Basalis Rosenthalii)* (Fig. 1086, p. 691).—This vein, which winds backwards round the crus cerebri to open into the *vein of Galen* just before it unites with its fellow, forms an anastomotic communication between that vein and the small veins of the base of the brain, and is formed by the confluence of some of these latter, viz., the *anterior cerebral vein*, the *deep Sylvian vein*, and the *inferior striate veins*. It must not be confused with the *basilar venous plexus* or *basilar sinus*, which is shown in Fig. 1080, p. 685, and described in note <sup>230</sup> above.

<sup>238</sup> *Veins of the Spinal Cord* (Ibid.).—Both Quain and Macalister speak generally of the *veins of the spinal cord* without any attempt at further precision in their nomenclature. According to Von Langer and Toldt (*op. cit.*, p. 599), "the *veins of the spinal cord* are arranged in two sets: a *superficial set*, *venæ spinales externæ* (the *external spinal veins*), which, like the arteries, run on the anterior and posterior surfaces, respectively, of the spinal cord: *venæ spinales externæ anteriores et posteriores* (anterior and posterior external spinal veins); and a *deep set*, *venæ spinales internæ* (the *internal spinal veins*), which are situate within the substance of the spinal cord in the neighbourhood of the central canal. The two sets communicate by horizontal branches; and other horizontal branches, running along the roots of the spinal nerves, connect the *external spinal veins* with the *internal vertebral venous plexuses*. (See note <sup>229</sup> above.)



<sup>299</sup> *Deep Median Vein* (Fig. 1087, p. 694).—The author, in the original German edition of this work, calls the *deep median vein* "the communicating branch between the superficial and the deep veins (*ramus anastomoticus*). Macalister calls it *vena mediana profunda*.

<sup>300</sup> *\*Intercapital Veins* (Fig. 1088, p. 695).—"The palmar veins of all the fingers [*palmar digital veins*] are connected in the interdigital folds by a transverse chain of anastomoses; from each anastomotic loop a short venous trunk, the *vena intercapitalaris*, passes backwards to the veins of the dorsum of the hand, and these trunks convey by far the greater portion of the blood from the palmar digital veins" (Von Langer and Toldt, *op. cit.*, p. 548).

<sup>301</sup> *Palmar Digital Veins* (Ibid.).—As in the case of the *palmar digital arteries* (see Appendix, note <sup>293</sup>), the author distinguishes between the *vena digitales volares propriae* (*proper palmar digital veins*—see Fig. 1088, p. 695), which are situated on the palmar surfaces of the fingers themselves, and the *vena digitales volares communes* (*common palmar digital veins*—see Fig. 1093, p. 700), which convey along the palmar surface of the metacarpus from the base of the fingers to the *superficial palmar venous arch* that portion of the blood that is not carried to the dorsum of the hand by the *\*intercapital veins* (see note <sup>300</sup> above).

<sup>302</sup> *\*Dorsal Metacarpal Veins, etc.* (Fig. 1089, p. 696).—In Quain's "Anatomy," and to a lesser extent also in Macalister's "Anatomy," the description and therefore the nomenclature of the venous system, especially as regards the veins of the extremities, is less full and less precise than that of Von Langer and Toldt, whose terminology is used in this Atlas. In the case of the *dorsal metacarpal veins*, and in several other instances, I have therefore given a literal translation of the Latin names used by the author.

<sup>303</sup> *\*Accessory Cephalic Vein* (Ibid.).—"The name *vena cephalica accessoria* is given to a vein, often of considerable size, which is mainly a continuation of the *\*fourth dorsal metacarpal vein* [see note <sup>302</sup> above]; this vessel crosses the back of the forearm obliquely, running upwards and outwards to join the *radial vein* in the upper part of the forearm, or the *cephalic vein* just above the bend of the elbow" (Von Langer and Toldt, *op. cit.*, p. 549).

<sup>304</sup> *Dorsal Venous Rete (or Plexus) of the Hand* (Ibid.).—Macalister describes this plexus as consisting of two parts: "The *internal dorsal plexus* is formed by the union of a vein from the little finger [*vena Salvatella*] with veins from the third and fourth interdigital cleft. The *external dorsal plexus* is formed by the junction of a vein from the thumb [*vena cephalica pollicis*] with veins from the index and middle fingers" (*op. cit.*, p. 278).

<sup>305</sup> *Cephalic and Radial Veins* (Fig. 1090, p. 697).—According to the English nomenclature, the *radial vein* begins in the outer part of the *dorsal venous plexus of the hand*, runs upwards along the outer side of the forearm to join the *median cephalic vein* a little above the elbow, in the outer bicipital groove; the trunk formed by the confluence of these vessels is in England known as the *cephalic vein*. The author gives the name of *vena cephalica* both to the *radial* and to the *cephalic veins* of English anatomists; he sometimes, however, distinguishes the former as *vena cephalica (antibrachii)*, and the latter as *vena cephalica (humeri)*.

<sup>306</sup> *Basilic and Ulnar Veins* (Ibid.).—The *anterior* and *posterior ulnar veins* of English anatomists (*anterior* and *posterior superficial ulnar veins*, according to Macalister), the former commencing on the hypothenar eminence and running upwards along the ulnar side of the front of the forearm, and the latter commencing in the inner part of the *dorsal venous plexus of the hand* and running upwards along the ulnar side of the back of the forearm, unite

as a rule a little below the elbow, the common trunk passing in front of the internal condyle to the inner bicipital groove, where by its confluence with the *median basilic vein* it forms the *basilic vein*. The author gives the name of *vena basilica* both to the *anterior ulnar* and to the *basilic veins* of English anatomists; he sometimes, however, distinguishes the former as *vena basilica (antibrachii)*, and the latter as *vena basilica (humeri)*.

<sup>307</sup> *\*Capital Vein of the Arm* (Ibid.).—Macalister, at the conclusion of his description of the superficial veins of the upper limb, writes (*op. cit.*, p. 278): "These veins are variable in relative size and arrangement. The basilic is the stem towards which all at first converged, and the radial originally crossed from without at the elbow to join it, receiving in its course the median and a descending branch from the outer bicipital sulcus. The adult form of the cephalic vein is a secondary development due to the dilatation of a communication between the uppermost radicle of this descending vein, and one of the thoracicohumeral veins. Intermediate forms are common." The arrangement of veins shown in the left-hand specimen of Fig. 1090 is obviously an example of the persistence of the primitive arrangement above described, the vein called *vena capitalis brachii* being really the *basilic vein*.

<sup>308</sup> *\*Median Vein of the Elbow* (Ibid.).—The arrangement of the veins in front of the elbow usually described as normal is for the *median vein*, after receiving the *deep median vein*, to divide into *median basilic* and *median cephalic branches*, as shown in the right-hand specimen in Fig. 1090. Nearly, if not quite, as common is the arrangement shown in the middle specimen of that figure, in which the *median vein* deviates to the ulnar side of the forearm and joins the anterior ulnar vein, while the radial vein divides well below the elbow into an outer branch, the *cephalic vein*, and an inner branch, called by the author *vena mediana cubiti*, which runs inwards and upwards across the flexure of the elbow, receiving in its course the *deep median vein*, and uniting with the trunk formed by the confluence of the *median* and *ulnar veins* to form the *basilic vein*. This is one of the "intermediate forms" alluded to by Macalister (see note <sup>307</sup> above), and the *\*median vein of the elbow* in this arrangement is the representative of the *median basilic vein* in the arrangement usually described as normal. Sometimes, though the *median vein* divides in "normal" fashion into *median basilic* and *median cephalic branches*, still, an anastomotic branch, parallel with the *median basilic vein* and a little above it, passes across the front of the elbow from the *radial* or the *cephalic vein* to the *basilic vein*. This vein, when present, is called by the author *\*vena mediana cubiti accessoria*, the accessory median vein of the elbow (see Fig. 1087, p. 694, and Fig. 1089, p. 696).

<sup>309</sup> (Fig. 1091, p. 698.) Regarding the nomenclature of this terminal portion of the *subscapular artery*, see note <sup>136</sup> above. The same considerations apply to the nomenclature of the companion vein.

<sup>310</sup> (Ibid.) This is the trunk formed by the union of the *anterior* and *posterior ulnar veins* (*anterior* and *posterior superficial ulnar veins*, according to Macalister). See note <sup>308</sup> above.

<sup>311</sup> *Deep Median Vein* (Ibid.).—The author, in the original German edition of this work, calls the *deep median vein* "communicating branch between the [deep] radial veins and the superficial veins (*ramus anastomoticus*). Macalister calls it *vena mediana profunda*.

<sup>312</sup> *Perforating Arteries* (Fig. 1099, p. 705).—Usually the *perforating arteries* are four in number, the *first*, *second*, and *third*, or *superior*, *middle*, and *inferior perforating arteries*, being branches of the *deep femoral* or *profunda artery*, while the terminal portion of

the *profunda*, which perforates the adductor magnus muscle in series with the branches just mentioned, constitutes the *fourth perforating artery*. In the specimen shown in Fig. 1099, however, there are apparently *three* perforating arteries only, the terminal portion of the *deep femoral* or *profunda artery* constituting the *third* of the series. (This is the arrangement described as normal by Von Langer and Toldt.)

<sup>313</sup> \**Femoropopliteal Vein* (Fig. 1102, p. 708).—"As the *external* or *short saphenous vein* enters the popliteal space, it is joined by an anastomotic cutaneous vein from the back of the thigh, \**vena femoropoplitea*, which runs beside the small sciatic nerve for some distance, and communicates with the lowest *perforating vein*; finally the *external saphenous vein* enters the *popliteal vein*. Not infrequently, however, the \**femoropopliteal vein* forms the true upward continuation of the *external saphenous vein*, so that the latter is connected with the popliteal vein only by a relatively small communicating branch, while it terminates in the *deep femoral* or *profunda vein* through the intermediation of the lowest *perforating vein*" (Von Langer and Toldt, *op. cit.*, pp. 552, 553). This variety is described by Quain (*op. cit.*, vol. ii., part ii., p. 538), but the name \**femoropopliteal vein* is not used by this author. Another fairly common variety is an enlargement of the communicating branch between the *external* and the *internal saphenous veins*, so that the former vein empties itself chiefly or entirely into the latter.

<sup>314</sup> *Lumbar and Aortic Lymphatic Glands and Plexuses* (Fig. 1113, p. 718).—Quain does not speak of *aortic lymphatic glands* and *plexus*, but divides the *lumbar glands* into three groups, two *lateral* and one *median*, which correspond roughly with the *lumbar* and *aortic glands* respectively of Toldt. Macalister's terminology, however, resembles that of the German author, for according to the former (*op. cit.*, p. 432) the *lumbar lymphatic plexuses* "are

united across the aorta by a median *aortic lymphatic plexus*, with about six glands in its course."

<sup>315</sup> *Submaxillary and Suprahypoid or Submental Lymphatic Glands* (Fig. 1115, p. 720).—"The lymphatic glands situate along the lower border of the inferior maxillary bone and on the surface of the submaxillary (salivary) gland, known as *lymphoglandula submaxillares*, receive the lymphatic vessels from the face that run beside the facial vein, and also those from the lower gums, the floor of the mouth, and the isthmus of the fauces. One or two glands, situate between the anterior bellies of the digastric muscles, and known as *lymphoglandula submentales*, receive the lymphatic vessels of the chin" (Von Langer and Toldt, *op. cit.*, p. 566). The last-named are apparently identical with those called by Sappey the *suprahypoid glands*, one or two small glands "placed in the centre of the neck between the anterior bellies of the two digastric muscles, and connected with the lymphatics descending from the lower lip" (Quain, *op. cit.*, vol. ii., part ii., p. 558).

<sup>316</sup> (Fig. 1116, p. 721.) As the author recognises two mediastina only, *anterior* and *posterior* (see Appendix to Part IV., note <sup>24</sup>), the lymphatic glands called by him *lymphoglandula mediastinales anteriores* comprise the *superior mediastinal* or *cardiac lymphatic glands* in addition to the *anterior mediastinal lymphatic glands* of English authors (see also note <sup>3</sup> to p. 482, in Part IV.).

<sup>317</sup> *Anterior Auricular and Parotid Lymphatic Glands* (Ibid.).—Writing of the *parotid lymphatic glands*, Quain states (*op. cit.*, vol. ii., part ii., p. 558) that they are "three or four, of small size . . . beneath the parotid fascia, and . . . frequently more or less embedded in the substance of the parotid gland; one, larger than the others, is situated immediately in front of the tragus of the ear." It is thus evident that the glands called by Toldt *lymphoglandula auriculares anteriores* are included by Quain among the *parotid lymphatic glands*.



INDEX  
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# INDEX

## TO THE ANGIOLOGY

Certain names in this Index have an asterisk (\*) prefixed; these, as more fully explained in the Translator's Preface, being terms that form part of the English nomenclature used in this work, but which are not commonly employed by English anatomists. To other names a dagger (†) is prefixed; these are Latin names used by the author in the original work, but not included in the official nomenclature of the "Anatomische Gesellschaft." Abbreviation: App.=Appendix.

### A.

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